How To Build Your Own Super Control Console! $2.50

ELECTRONIC FUN

with COMPUTERS AND GAMES

ICD08274

SEPTEMBER 1983 VOL. 1 NO. 11

GAMES GET SMART

Keyboards From The Big Three

NASA And The Ultimate Video Game

Reviews:
Mission X
White Water
Necromancer
Robot Tank

Look what we have in store for your Atari.

Arti Haroutunian has done it again.

The mind behind our first Atari® success, *Kid Grid,* has just dreamed up another one: *Juice!*

And if you don't think that's electrifying, consider what the experts are saying.

Electronic Fun with Computers and Games says that *Kid Grid* "may sound like kid stuff, but it isn't. Even on the slowest setting ...the game is quick enough to challenge almost anyone."

That's right. And that's not all.

Electronic Games calls the Kid "Hypnotic, appealing, fast-moving arcade action of the highest calibre, ...one of the most compulsive, utterly addictive contests in the world of computer gaming."

We couldn't agree more.

What will the critics say about *Juice!*? Will they like its colorful graphics, superior sound effects, charming characters and challenging play patterns?

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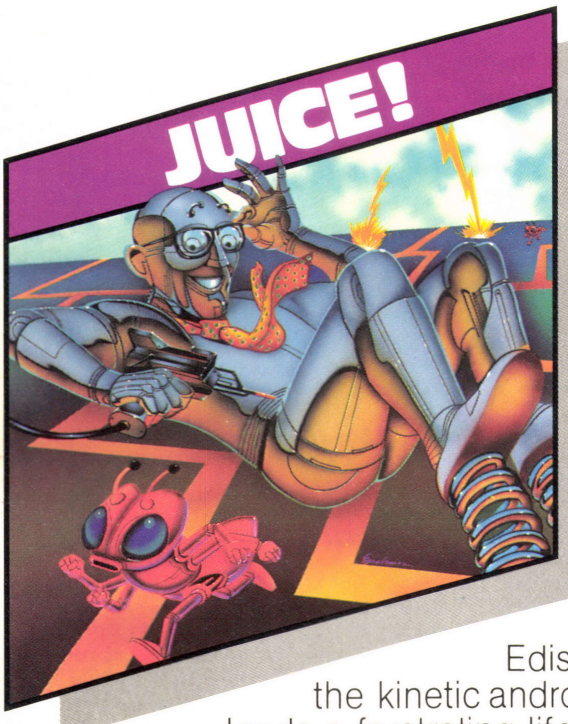

Edison, the kinetic android, leads a frustrating life.

All he wants to do is build his circuit boards and go with the flow. But things keep getting in the way.

Nohms—a negative influence—bug him constantly. Flash, the lightning dolt, disconnects everything in his path.

And the cunning Killerwatt is out to fry poor Edison's brains.

You'll get a charge out of this one. And a few jolts, too!

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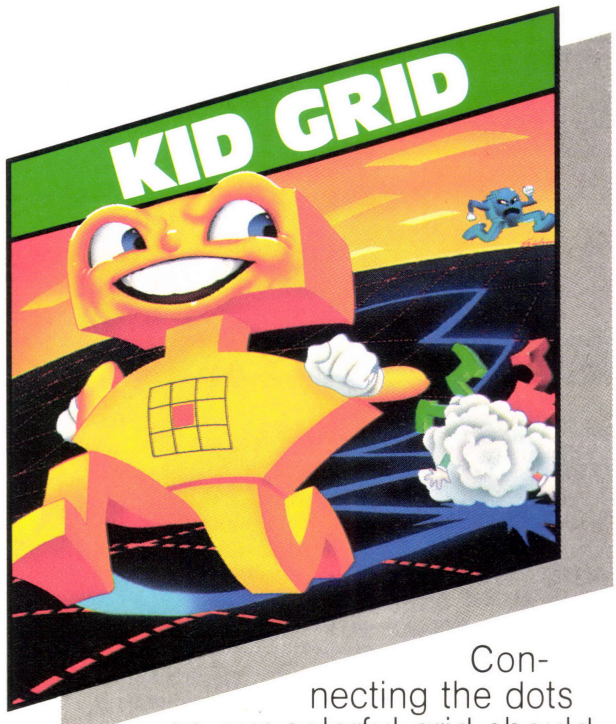

Connecting the dots on our colorful grid should be easy, right?

Wrong. Because the bullies are in hot pursuit!

Squashface, Thuggy, Muggy and Moose are their names. And *you* are their game. And what's more, they're faster than you are.

But you're smarter. And you control the stun button.

So keep your eyes peeled for the mysterious question mark and don't slow down at corners!

(Suggested retail: $29.95)

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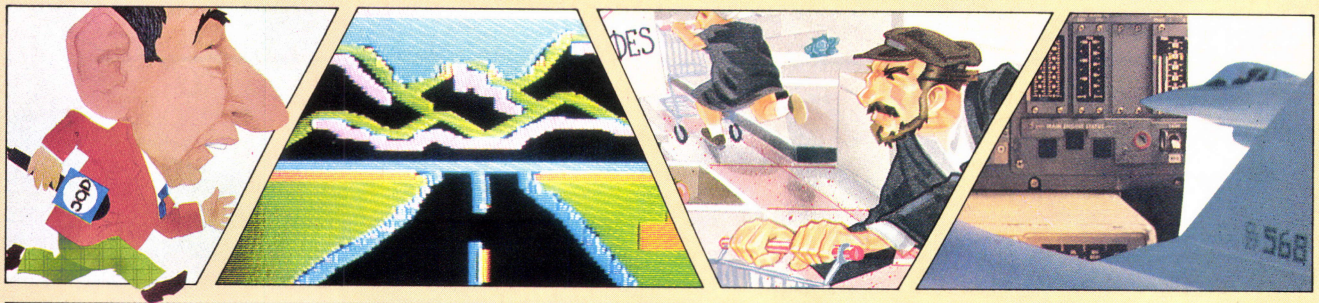

ELECTRONIC FUN WITH COMPUTERS & GAMES

Special Reports

FUTURE FACT/FUTURE FANTASY: FASTEN YOUR SEAT DELTS *By Suzan Prince* Up, up and . . . stay in one place. It may sound like a contradiction in terms but with flight simulators you can get gamer's high without leaving the ground **26**

ATARI, MATTEL COLECO: HOW THE ADD-ONS ADD UP *By the EF Staff* At last, the long-awaited keyboards to the kingdom are here. This month's special Game Workout gives you a first look at the computer modules **33**

COMMAND CONSOLE *By Charles Johnson* Playing games more and enjoying it less because of inadequate controllers? Charles Johnson's custom console is probably what you've been looking for. Learn how to build it yourself.....**40**

COMPUTER TUTOR *By Marc Berman* These days the Board of Education is being replaced by the Keyboard of Education. Educational software can get you from Kindergarten through graduate school with no pep rallies or detention **70**

TI 99/4A BUYER'S GUIDE All the companies making software for the computer from the Lone Star State.....**84**

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FIRST SCREENING: 3-D TUNNELS OF TERROR Up against the wall with Steve Bender's maze game for the Apple.....**87**

Equipment Reviews

COMPUTER WORKOUT: VZ DOES IT *By Jules Gilder* At under $100, it may be VZ to buy but how good is this new computer from Video Technology? The new inexpensive computers are making it easier for people to join the technology revolution, but making it harder for software companies to keep pace **74**

Game Reviews

HITS & MISSILES Michael Brown finds his *Mission X* in life; Michael Blanchet drives a *Robot Tank* and braves *White Water* without a life jacket; *Buzz Bombers* away with George Kopp; *Crazy Climber* has Mark Trost climbing the walls plus underwater basket weaving and submarine shooting in *Sub Scan* and *Polaris* and 5200 *Jungle Hunt* and *Reactor* plus scads of computer games—Randi Hacker bears everything in *Stickybear Bop* and makes a wisp come true in *Necromancer* but can't remember where she left the Jewel of Selmarn in the *Blade of Blackpoole*; Michael Blanchet catches hot rivets in *Hard Hat Mack* and surfs a *Crime Wave*—more computer reviews than ever before **48**

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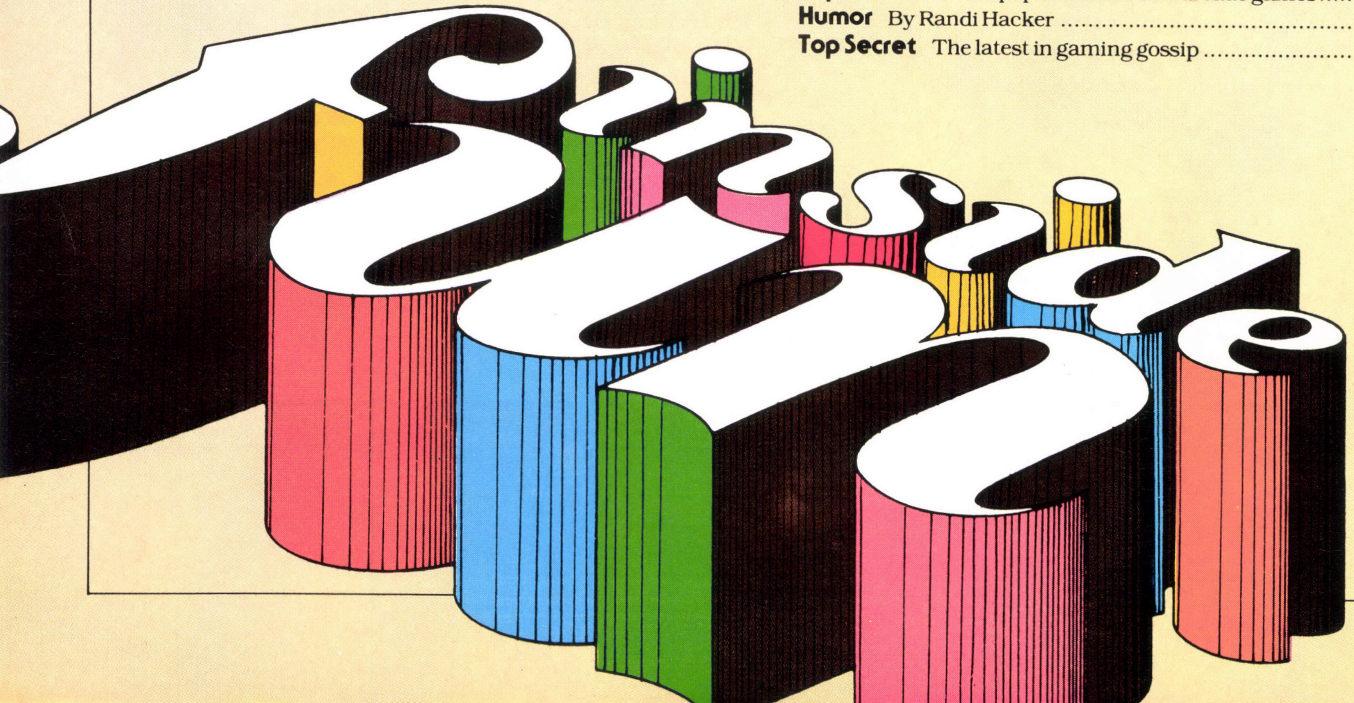
Cover Illustration: Frank Riley



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More Than Awesome!

"Code Crimson, do you read me Star Fighter Armageddon?"
"Affirmative, Commander. Over."
"This is urgent! The Quarriors have attacked Repton! They're building a base station and draining our power supply. They're guarding Repton with everything they've got. You and your squadron are our last hope!"
"I'm on my way, Commander!"
"Full speed, Star Fighter. Remember, you (Click! Pop! Buzz! . . .)"
"Commander?! Come in! Commander?"
Will the Armageddon arrive in time to save Repton? Or will the evil Quarriors take over the colony? There's only one way to find out!

Take over the controls of the Star Fighter Armageddon. Besides a laser gun, you are armed with devastating nuke bombs, a radar screen and an energy shield. You'll need them all to stop the Quarriors! You'll be under constant attack from Nova Cruisers and Single Saucers. You've got to avoid the Spye Surveillance Satellites and the deadly Dyne-Beam Shooters. And watch out for the Draynes that are after the Reptonian power supply. Repton is a battle so realistic, you'll be relieved to find out that you're still on Earth when it's over!

Available on disk for the Apple II, II+ and IIe, Atari 800 and 1200 and Commodore 64. Available on cartridge for the VIC-20.

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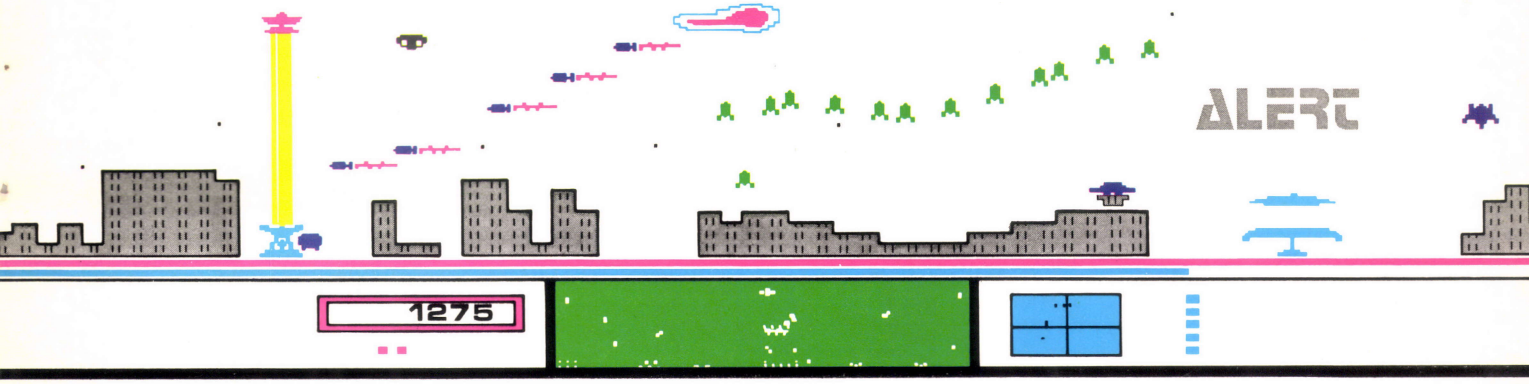

Editorial

Shock of the new

If you think everyone loves surprises you've never been a magazine editor. Try as we might to keep you up-to-date, informed and armed with all the latest news about what's happening with computers and games, the rug gets pulled out from under us time after time. The latest shockers come from Coleco and Atari.

When we saw the Coleco Super Game Module back in February, we were impressed, and judging by the mail received as a result of our article about it in the June issue, so were you. Imagine our surprise when we found out that Coleco had put the whole thing on the shelf. Apparently it just wouldn't work in mass production. The Super Games will still be available for the Adam computer, which has a different design. It seems that the original Super Game Module would be even more expensive than Adam. Oh well, Coleco is probably more embarrassed than we are.

As for Atari, with absolutely no fanfare whatsoever they came out with four new computers—the 600XL, 800XL, 1400XL and 1450 XLD. (Read about them in this month's EFG Times.*) We asked someone from Atari why nobody knew about the new machines. The answer: "Because we didn't tell anyone." As long as there's a good reason we can live with anything.*

Anyway, surprises aside, we've got another hot issue for you, including a first look at Coleco's Adam, Atari's Graduate, and a repeat look at Intellivision's computer keyboard and peripherals. Plus lots of game reviews and more.

As for reviews, a lot of you have wondered why we changed our cover logo—it's received mixed reviews from readers. We made the change because the new logo is bigger and flashier and easier to spot on the newsstand. More and more gamers are joining the EF *family every issue, so we're happy.*

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Moving in circles can turn your scores around.

Introducing the PRO-LINE™ TRAK-BALL™ controller for your ATARI® 2600™ and 5200™ systems.

Now you can play your favorite video games at home the same way you play them in the arcade. With the new TRAK-BALL controller especially designed to fit your Atari system.

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And with many new TRAK-BALL compatible games on the way, your Atari system will keep getting better all the time.

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ATARI

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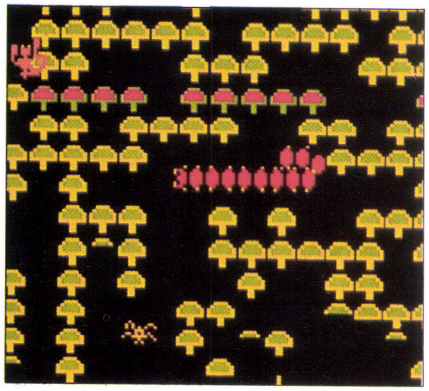
letters to the editors



CENTIPEDE on ColecoVision?

MAD AT ATARI

I was shocked and distressed to hear about Atari's latest attempts to force wholesale distributors of video games not to sell any competing brands. They shouldn't try to monopolize the industry in this way—all they are doing is making many loyal Atari fans angry at them. Several months ago I sold my Atari 2600 to buy a ColecoVision, and with their expansion module I've still been able to enjoy great Atari games like *Centipede, Ms. Pac-Man, Raiders* and others. I wish Atari would make versions of their great games for the other big game systems like Coleco and Mattel instead of acting so stuck-up and having such an arrogant attitude. With the new Coleco Super Game Module coming out, Atari could design versions of their games for that system and have some of the best home-to-arcade translations yet.

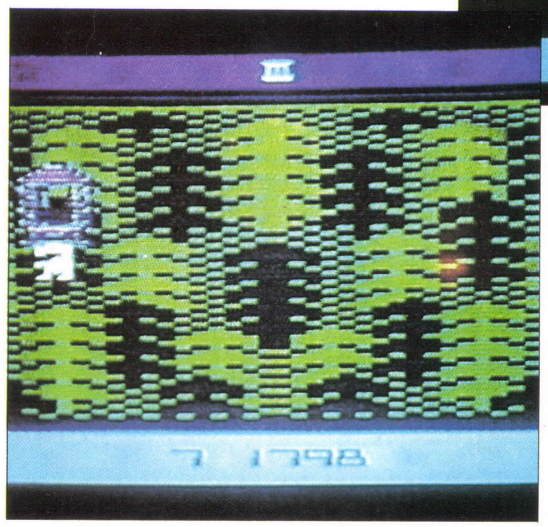
Jeff Silva
Tacoma, WA

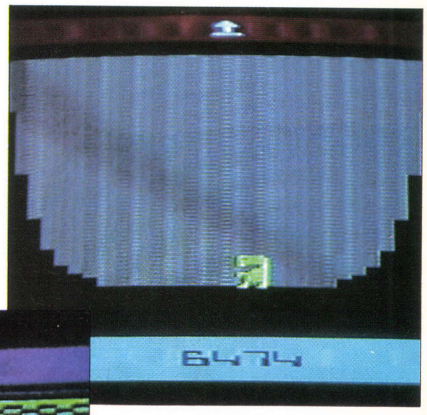
That would be a good idea, Jeff, except for one thing. It doesn't look like there's going to be a Super Game Module at all. See this month's Input/Output *for details.*

CHILD MASTERS

This letter—rather, this angry letter—is in response to Frank Lovece's review of Atari's *E.T.* cartridge (*EF*, January). Lovece implied that kids only like cutesy games, that they are not sophisticated enough to play other games like *Ms. Pac-Man*, and that most of them will not have the patience to levitate E.T. out of a well: "Given the attention span of humans in general—forget about the *very* short attention span of most kids . . ." (I'm quoting the review). This is definitely not true. I mean, it takes time to kill the Furies in *No Escape!* Kids *can* play complex games like *Star Raiders* just as well as lots of adults. Next time you publish a review of a cartridge like *E.T.*, give a straight review.

Paul Brown
Reston, VA





E.T. in the well.

TRS IS COMING

I have just bought the TRS-80 Color Computer, and I have never seen an article in your magazine about it. Please put one in. Even though you've never published one in *EF*, I still think that your magazine is the best one out.

Michael Herscovitch
Los Angeles, CA

Thanks, Michael, and hold on—we'll be running a Color Computer article real soon.

ATARI CLUB

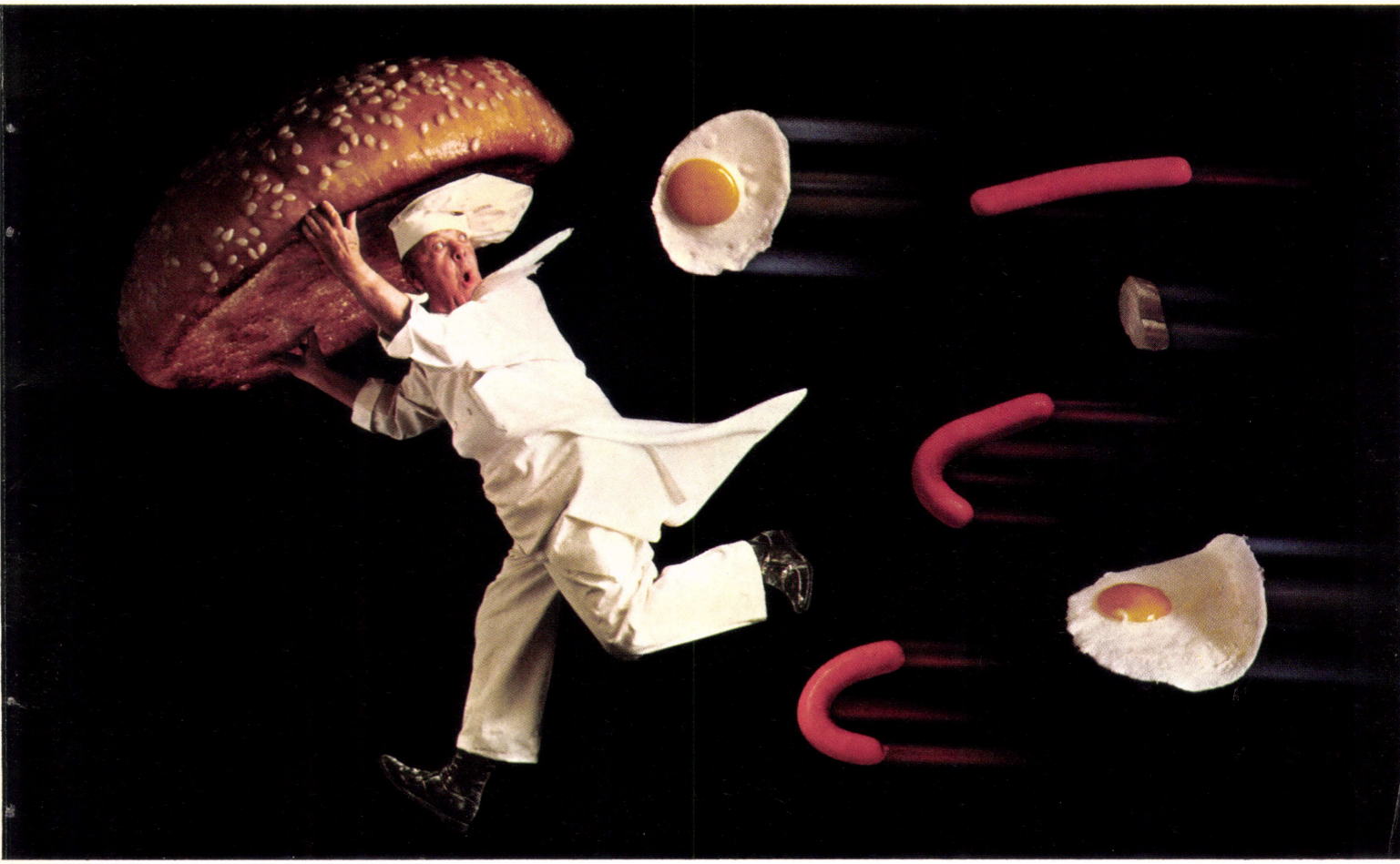
I would like to become a member of the Atari Club. Could you please give me their address and tell me how to join? Thanks, and keep up the good work.

Chris Breemer
Reston, VA

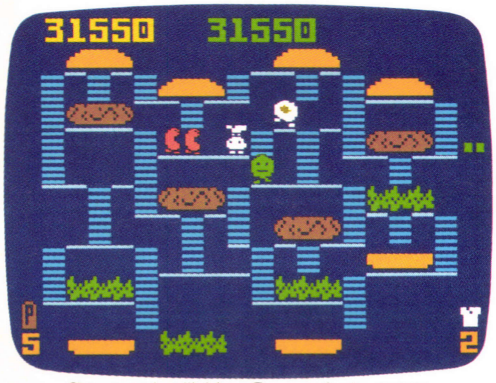
Sure thing, Chris. All you have to do to join is send your name and address to Atari Club, 1700 Walnut Street, Philadelphia, PA 19103. There's no charge for membership.

Write to us! We can't promise that we'll answer every letter, but we will read them all. We welcome your comments, advice and questions. Send your letters to: Electronic Fun, *350 E. 81st St., New York, NY 10028*

TO BEAT OUR NEW HOME VIDEO GAME, YOU'VE GOT TO MOVE YOUR BUNS.



If you've been waiting for the home version of one of America's hottest arcade games, your order is ready. Introducing BurgerTime™* from Mattel Electronics. For your Intellivision,® Atari®2600, Apple®II,** Aquarius™** or IBM® Personal Computer.



Shown on Intellivision. Game varies by system.

Your job is to climb up the ladders and assemble an order of giant hamburgers. But you've got to do it fast because you're being chased by killer hot dogs, sour pickles and a very nasty fried egg.

Good thing you've got your pepper shaker. One shake and they're stunned.

But just make sure you don't run out of pepper. Because you know what happens then.

You stop making lunch. And you start becoming it.

BurgerTime™

FROM MATTEL ELECTRONICS®

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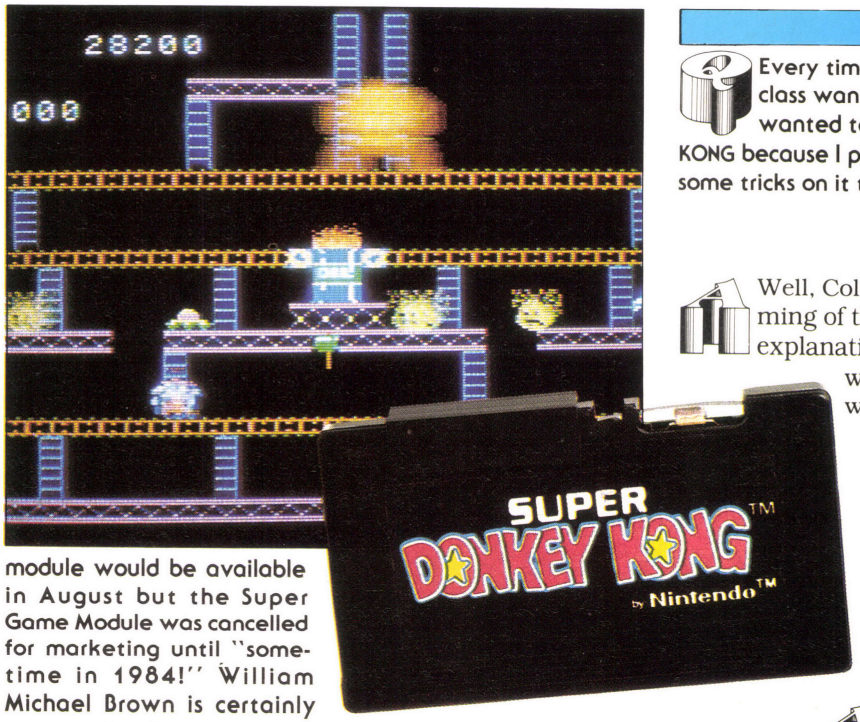
output input

Now you see it, now you don't

What in the world is going on at Coleco? After reading your excellent review of their Super Game Module (June issue), I called Coleco to find out about the other computer module. I was told that the computer



module would be available in August but the Super Game Module was cancelled for marketing until "sometime in 1984!" William Michael Brown is certainly correct when he states that Coleco's new products are "shrouded in mystery." Could you lift the shroud?

George Knochel
Lakewood, FL

We'll try. According to our sources, Coleco has, in fact, decided against marketing the Super Game Module. The decision was made very recently (at the end of June to be precise) and has something to do with the wafer drive which, you will remember, was what powered the module. Coleco has decided against using a wafer drive altogether and has dropped its plans to market a Super Game Module. However, all the Super Games originally slated for the Super Game Module will be translated into the digital data medium that is being used with Adam, the Coleco computer. The games will be released in time for Christmas and include *Slither*, *Tunnels & Trolls*, *The Sword and Sorceror*, *Ulysses and the Golden Fleece*, *Cranston Manor*, *Troll's Tale*, *Zaxxon*, *Smurf Rescue*, *Donkey Kong*, *Donkey Kong Jr.*, *Sub Roc*, *Turbo*, *Buck Rogers* (which comes with the computer system), *Gorf*, *Time Pilot* and *Front Line*.

Every time I get a new issue of EF everyone in my class wants to see it. I just got a ColecoVision and I wanted to know if Coleco reprogrammed DONKEY KONG because I played an older DK cartridge and I can do some tricks on it that I can't do on the new one.

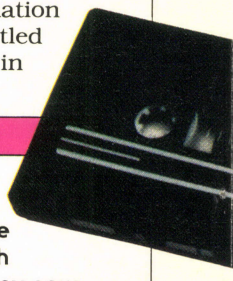
Donny Park
Portland, OR

Well, Coleco says there's been no reprogramming of the *Donkey Kong* cartridge. The only explanation we can offer you, Donny, is that you were lucky enough to get a cartridge with a tricky glitch on it.

I recently saw a TV commercial that claimed that there will soon be a keyboard for the Atari 2600. If this is true, when is it schedule for release?

Greta Faist
Aurora, CO

It is most definitely true and it's called The Graduate Computer. It plugs into the VCS and adds 8K of RAM to the system. There's more information about the unit in this issue in the article entitled "Atari, Mattel, Coleco." It's scheduled to be in your neighborhood stores around October.



In the May issue of your magazine you mentioned a new product called The Power by Amiga. Could you tell me if the Amiga cassettes will also work with my Starpath Supercharger system? Also, have you heard of any new game cassettes that Starpath is planning in the future?

Mike Babin
Port Arthur, TX

Since the time that we printed the news about that new product, things have changed somewhat, I'm afraid. Amiga has completely

altered The Power. Now it's no longer a memory expander that attaches to a cassette recorder. Instead, The Power is going to be marketed as a super cartridge; one that has three, three, three games in one. The reason for this change of tack is cost. Since game cartridges are coming down so radically in price, there's no point in putting games out on cassette in order to make them less expensive—at least that's Amiga's opinion. As far as new games from Starpath go, there are six: *Rabbit Transit*, in which you're a rabbit who has to avoid snakes and other enemies; *Sweat*, a decathlon game with all 10 events; *Party Mix*, a game that allows two teams of two players each to battle each other in events like tug o' war; *Survival Island*, a multi-screened adventure game which starts out in the ocean and ends up on a deserted island; *Sword of Saros*, involving invisible mazes and *Frogger*, the arcade game, newly licensed for the Supercharger system.

How come the only new things that ever come out for the Atari 2600 are cartridges instead of adapters for other systems? Is it because they can't obtain licenses from other companies or is the system incapable of producing better graphics or is it too expensive or what? The reason I want to know this is because I own an Atari 2600 and always look for expansion modules. The reason I wrote to your magazine is because you always answer questions about new systems. Even if Atari doesn't plan to produce any expansion modules, could you please still print my letter so in case someone hears about one, they could send information to me?

Chris Nichols
West Covina, CA

Congratulations, Chris! You guessed the reason why there are no expansion modules for the 2600 right in your letter. The technology of the 2600 simply isn't sophisticated enough to allow it to accept adapters for more sophisticated game carts such as ColecoVision. And, besides, if it could play games with more memory, Atari would probably produce a 5200 adapter first. There is an adapter for the 5200 which lets it play 2600 games and that's scheduled for release sometime this fall.

Do you have a question about video games or computers that needs answering? Send your questions to: Electronic Fun, *350 E. 81st St. New York, NY 10028.*

More power-(and other) sticks to you

JD HOME ASSOC.

The Obelisk $49.95 (one player) $84.95 (two player)

Being comfortable and playing home video games used to be almost a contradiction in terms. Either you sat on the floor and risked lower back problems later in life or you relaxed in your favorite chair and risked instant death at the hands of, say, the evil Gorfian Flagship. The Obelisk solved this problem. How? By putting the joystick controls into a raised stand which comes up to the height of your favorite chair.

The Joysticks and fire buttons are manufactured by companies that make them for arcade games and the Obelisk is compatible with the Atari 2600, 400/800, the Commodore VIC-20 and ColecoVision (except for *Cosmic Avenger*). Each unit comes with a 12" Wico extension cable and, for $9.94 more, you can get a rapid fire button.

The Obelisk is constructed of hardwood and formica in: Black/Walnut, Almond/Cherry, Brown/Oak and Blue-Gray/Maple.

J.D. Home Assoc.
618 W. Griffin Dr.
Bozeman, MT 59715

AMIGA

ColecoVision Power-Stick $20.00

Not too long ago, Amiga introduced a tiny little joystick for the Atari and Commodore game systems and computers. This Power-Stick fit comfortably into the palm of a hand and was remarkably responsive and precise, proving once again that it's performance and not size that really counts. But naturally, ColecoVision and Intellivision owners once again felt left out and moped around looking sour. Stop pouting. Amiga has introduced a Power-Stick for both these units—and the TI 99/4A, too. The Power-Stick differs from the factory-made ColecoVision controller in two ways: the control stick is located at the bottom of the unit and the keyboard is tilted at a 30 degree angle making it easier to read those plastic overlays that come with many cartridges. The Intellivision unit is almost identical to the ColecoVision model and the difference between it and the standard Intellivision controller is that there's a joystick instead of the bothersome disk. And the TI 99/4A model is also identical in appearance except that two controllers are hardwired into a single plug to fit the computer's single jack configuration. Amiga, you will remember, is the company that brought you the Joyboard, a foot controller.

Amiga Corporation
3350 Scott Boulevard, Bldg. #7
Santa Clara, CA 95051

RITAM

Monty Plays Scrabble $150.00

So good at Scrabble that no one will play with you anymore? In that case, you clearly need Monty, who is a Scrabble playing fool. Monty runs on either AC current or batteries. He starts with a 12,000 word vocabulary but modules are available which add obscure words

Peripherals

to his repertoire: like qat and adze and all those printers' measures you always pull out of your hat at the last minute. Used with a specially provided game-and-score pad or in conjunction with a Scrabble board and tiles, Monty can play up to three players at four different skill levels. And, unlike some other computers we won't name, Monty doesn't always win. Monty even assumes the distasteful task of keeping score. In addition to this handheld model, Monty is also available on disks for several computers, the Apple II among them. A disk runs about $39.95.

Ritam Corporation
100 E. Burlington
Fairfield, IA 52556
(800) 247-0043

SUNCOM

Starfighter Apple Joystick $49.95

Another new joystick for the Apple computer? Yes, only this one, according to the company, employs a unique, new proprietary design which is a "complete departure from controllers currently being sold." Most analog joysticks are composed of two potentiometers and a mechanical linkage. The Starfighter contains thick-film resistive printing technology. This, says Suncom, results in a more responsive controller. You may also fine tune your Starfighter using several inboard trimming adjustments. The throw adjuster, for example, may be varied from 20 degrees to 40 degrees providing four levels of joystick output. In addition there are fire buttons for both left- and right-handed players as well as an alternative-function firing button.

Suncom Inc.
650 E. Anthony Trail
Northbrook, IL 60062

DISCWASHER

Computer Cassette Drive Care Set $14.95

Those of us who have a hard enough time keeping our houses spic and span probably regard the advent of the personal computer as just another thing to dust off once every three years or so (as the spirit moves us). And then those cassette recorders: just two more heads to keep clean. Fortunately, Discwasher has a product that makes keeping heads clean if not enjoyable, then certainly a snap. The Computer Cassette Drive Care Set has a head cleaner that slips directly into the cassette recorder and is designed to clean the cassette drive head within 15 seconds. The cleaner is nonabrasive and uses no alcohol or fluids. The Cassette Drive Mechanism Cleaner (also included in the set) clears all contamination from the pinch rollers and capstans on home and business units.

Discwasher
1407 N. Providence Rd.
PO Box 6021
Columbia, MO 65205

reader's tips

SPACE INVADERS

You can get automatic fire on the VCS *Space Invaders* by first turning the VCS off, then turning it back on again while holding down the Reset lever. This only works on Game One, but you'll get automatic fire for every game there after.

Dan Nevins
Milwaukee, WI

PITFALL!

The way to get through *Pitfall!* is with a lot of concentration. But if that doesn't work, after you are all out of the trees, head toward the left and keep your eyes on the game. Act as if you were Pitfall Harry.You should be able to score 52,000 with ease.

David Burnbaum
Macomb, IL

POLE POSITION

During your qualifying run: When you're first starting out, wait till you hit 95 mph before putting it in high. Whenever you're heading into the fourth turn, put it in low so you won't hit the *Centipede* sign.

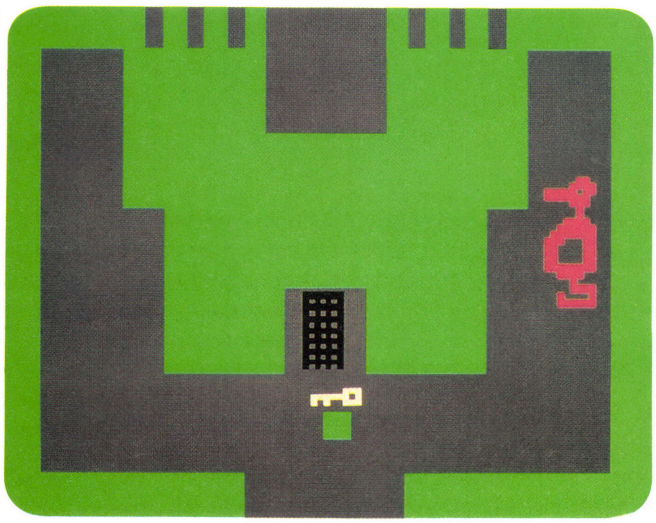
Shawn Aultman
South Daytona, FL

ZAXXON

In ColecoVision level four: If a turret shoots at you and you move up, the missile will follow you up—but once it goes up it can't come back down. So, when the turret shoots, move up and then back down quickly. It takes time to master but it helps your score.

Bruce McGarigle
Delanio, NJ

ADVENTURE



To get away from the Bat: Open up the Golden Castle, touch the Bat, bring him straight up about two inches inside and push your red button. He should stay in there.

Patrick Vorndran
Rochester, NY

NFL FOOTBALL

At the beginning of the game, try a lot of pass plays. To fool the defense, use receiver two and passing zones one, four and five. I've found that the defensive player normally expects receiver one to go out for a pass. After establishing your passing game, switch to the run. Formations eight and nine are normally used, but four and five are also good. When using five, run to the top of the screen. On four, run to the bottom. On defense, if you have a large lead, rush the quarterback. If you do, watch for the receiver. If he goes out for a pass, get in the receiver's line and rush at the same time.

Kevin Kirby
Papillion, NE

DEFENDER

In the Atari game, don't shoot the Bomber at the beginning of a stage. If you get hit during that stage, your next ship will start out at the Bomber—a place where you could get killed fast.

Ryan Sheperd
Tontogany, OH

VENTURE

Try not to kill the monsters when entering the room. You'll receive no score for it. After you have captured the treasure, kill all the monsters and you will double your score.

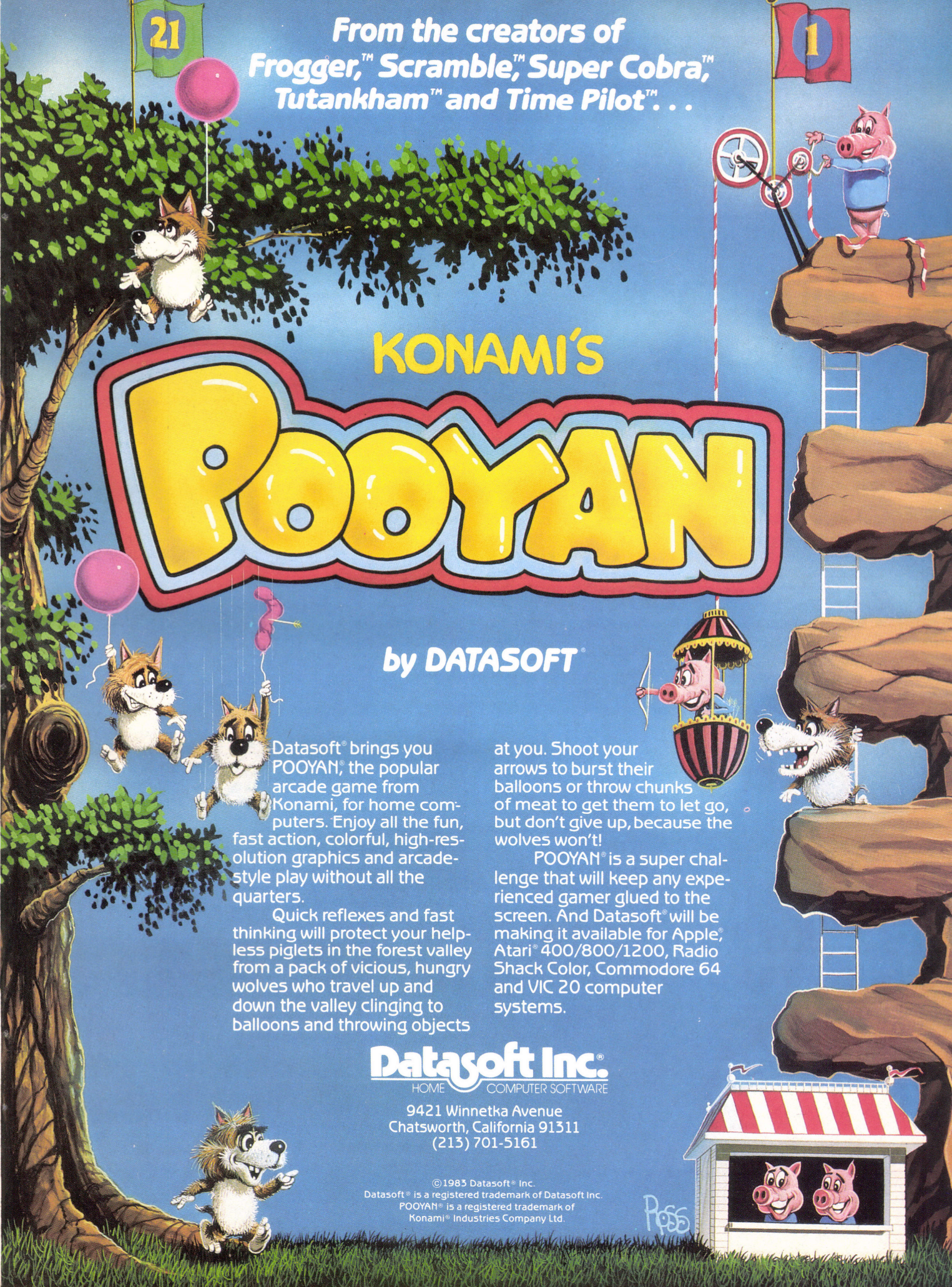
Martin G. Jones
Bronx, NY

TEMPEST

If you'd like to improve your score, simply start on Board 9 or 11 instead of Board One. If cleared, you'll receive 60,000 to 80,000 points and be well on your way to being a better player.

Taylor Morgan
Gadsden, AL

Do you have a tip for your favorite game? If it's good, we'll print it in Reader's Tips. *Send tips to:* Electronic Fun, *250 E. 81st St., New York, NY 10028.*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Tutankham™ and Time Pilot™. . .
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E.F.G. Times

VOLUME ONE, NUMBER ELEVEN SEPTEMBER, 1983

APRIL FOOL CONTEST WINNERS:

It's been five months since our April Fool Contest asked you to find five deliberately falsified items cleverly concealed in that month's issue. Well, the results are finally in, and you'll find a list of the winners in the box below.

For those of you not on the list, who are probably dying to know the correct answers, here they are:

1. New Products, page 15: The "Mountebank Products GameScreen" item was entirely faked, right down to the photo of an Atari 400 powerpack disguised by a phony label (whipped up by *EF* Art Director Marjorie Crane), and the Mountebank Company's address (actually the address of *EF*'s West Coast offices).

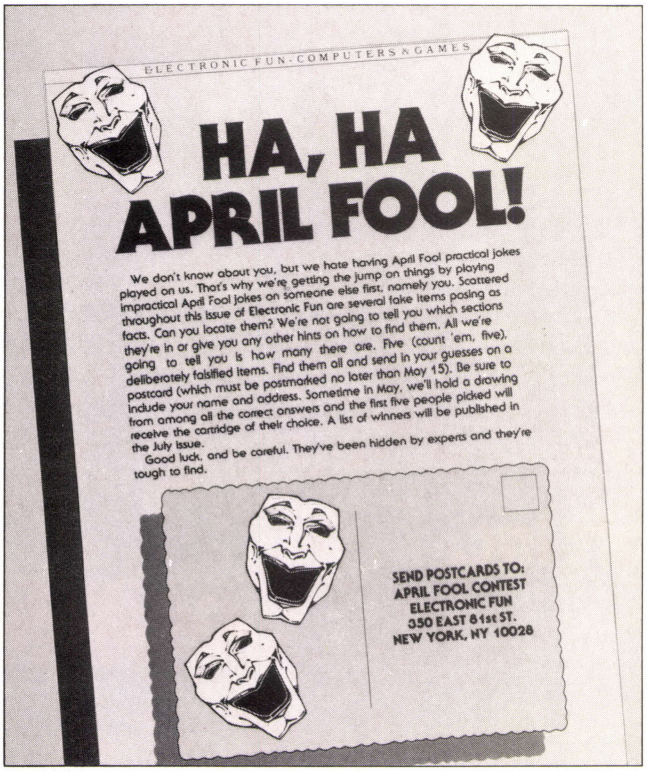
2. Reader's Tips, page 16: The ringer was Ernest Frimbo's tip for *Orient Express*, the game that never was (see number five, below).

3. Output/Input, page 19: Peter Dalton's strange letter about almost being eaten while trying to play *Defender* and Michael Blanchet's reply were both faked.

4. E.F.G. Times, page 21: Everything under the headline "Games Are Good For You" was purest baloney, except for the photo of the *Zaxxon* machine.

5. Hits & Missiles, page 55 to 56: Agatha Christie's gourmet detective Hercule Poirot never starred in a video game, there is no company called "Imagin", and there never was (alas) a game called *Orient Express*.

Our apologies for keeping you in suspense so long, but the sheer number of entries made it impossible to publish the winners list until this month. Our congratulations to the winners—and thanks for being such good sports.



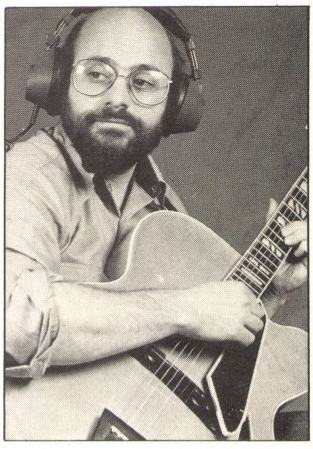
THE ENVELOPE PLEASE...

We received over 300 entries and we thank everyone for participating. The five names below are the winners of our April Fool Contest; they got all five exactly right, had the earliest postmarks and will receive the free cartridges of their choice.

WINNERS

John Rautio
—Milwaukee, Wisconsin
Eric Biggers
—Birmingham, Alabama
Charles Ardai
—New York, New York
Michael Kelley
—Eldora, Iowa
Chris Brien
—Brossard, Quebec

Divertimento for Lasers



Composer Ethan Fein.

Did you ever wish your favorite game's sound effects were just a little more musical? After all, they say playing Paul McCartney for your plants helps them grow better—and that loud noises don't do them any good at all. Couldn't you get a better score in, say, *Demon Attack*, if you were listening to music in addition to the usual beeps, boings and kabooms?

That's what guitarist and composer Ethan Fein thinks. An avid video gamer who also happens to play in the orchestra in the hit Broadway musical *Cats*, Fein took a band into a recording studio a few months ago and came out with two all-purpose background soundtracks designed to inspire the player: *Music for Space Battle Video Games* and *Music for Munchie Video Games*.

Continued on next page

LOOK MA! NO HANDS!

Play on your feet, not on your seat.

Now you can play video games with your hands behind your back. With the Joyboard Power Body Control. There is nothing like it.

You lean, you tilt, you bend, you turn.

You ski the most treacherous slopes. You shoot the curl. You battle the enemy aliens, the enemy ghosts, the enemy snakes, the enemy pickles. And you get the new Mogul Maniac™ Ski Game! A new kind of thrill, a new kind of skill for you to master!

What has the rest of you been doing while your hand has been playing Atari?

Or ColecoVision, or Sears Video Arcade or VIC 20?

Then beg, borrow or save up for

THE JOYBOARD™

POWER BODY CONTROL

With Mogul Maniac™ Ski Game.

DON'T WAIT. IT WON'T.

THE POWER SYSTEM™ AMIGA

dedicated to the science of fun!

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E.F.G. Times

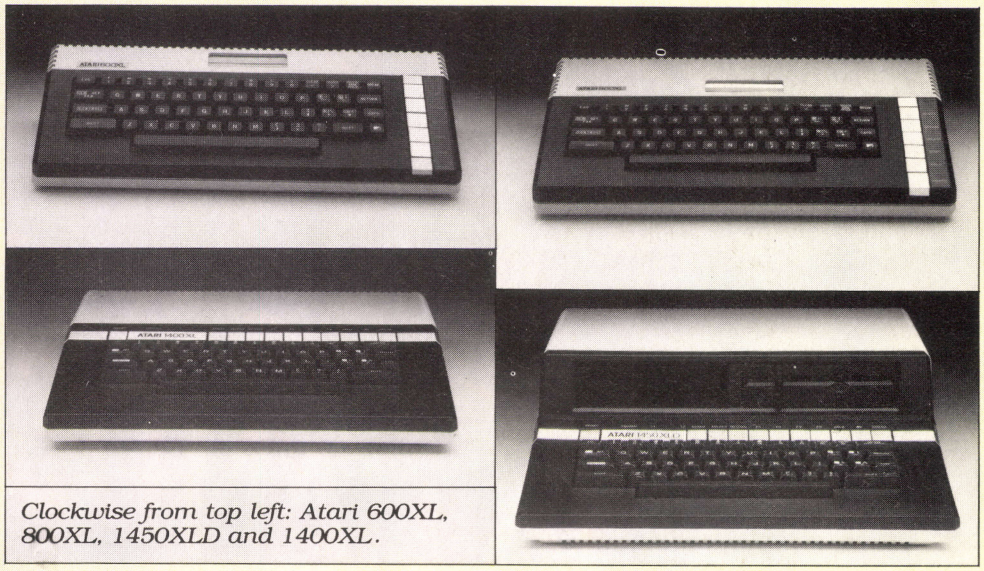
ATARI UNVEILS NEW COMPUTERS

Atari is full of surprises. The latest is four new computers, the 600XL, 800XL, 1400XL and 1450XLD. All of them have the same styling as the 1200XL, and the 1450 XLD has a built-in disk drive.

All the new computers have built-in BASIC and will use the same software as all other Atari computers. While the 600XL has 16K of RAM (expandable to 64K), all the others are 64K out of the box. They've all got full-stroke keyboards, and the 600XL and 800XL put the cartridge slot back where it was on the 400 and 800.

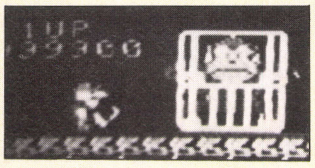
How much do the machines cost? Atari isn't saying, particularly the way computer prices seem to be approaching absolute zero. The computers will all be on sale well before Christmas. What's to become of the 400 and 800? Atari isn't saying.

In addition to the new computers, Atari is also bringing out a light pen, a graphics tablet, 16K LOGO and a lot of new software.



Clockwise from top left: Atari 600XL, 800XL, 1450XLD and 1400XL.

★ MONTHLY CONTEST ★



The results are in for our June contest, Coleco's *Donkey Kong Jr.* The winners are Edward J. Semrad of Waukesha, WI and Joseph Ambrosini of Maspeth, NY. Those of you with good memories may remember that the Waukesha Wiz also won our *Defender* contest a few months back. Anyway, congratulations on high scores of 999,900.

This month's contest—*Happy Trails* by Activision for Intellivision. The winner will receive the cartridge of his or her choice. Send a photograph showing your score to September Contest, *Electronic Fun*, 350 E. 81 St., New York, NY 10028. Entries must be postmarked by September 15. Be sure to include your name and address.

SETTING IT STRAIGHT

Are our faces red! In June's *First Screening*, *Dragon Maze*, there were two errors in the printout. We apologize to everyone and here are the correct lines:

```
10000 DATA 2,3,144,
      28,23,3,144,28,6,
      21,152,3,8,4,
      152,14,9,18,152,
      9,12,4,152,3

10003 DATA 5,17,152,
      3,5,27,152,11,
      7,29,152,2,
      9,14,152,3
```

Music

Continued from page 16

Each of the cassettes contains over 90 minutes of music—an unusual length for most cassettes and something Fein didn't count on when he first got the idea. "I play the games pretty constantly, and when I started I asked myself: 'What would go with this?' " he says. "The sound effects got to be annoying all by themselves. A friend of mine tried playing *Phaser Patrol* to a *Star Wars* soundtrack album, but we were disappointed because the music ended so fast."

Fein says he tried to interest a couple of major video game companies in the music before it was recorded, but without success. In the meantime, he's distributing the $8.95 cassettes through Eucalyptus Records, 28 Singleton Street, Woonsocket, RI 02895.

QUOTE OF THE MONTH

"As long as your child or teenager is doing well in the other areas of his or her life, video games shouldn't cause any problems. They are as good or as bad as the people who use them."—Dirck Brendlinger, M.D., Willingboro, NJ

Have you got an item for the EFG Times? *News events, game tips, photos and other information are gladly accepted. Send material to:* EF, *350 E. 81st St., New York, New York 10028.*

For Atari® 2600,™ Atari and Commodore Computers.
For TI-99 / 4A™ Double Power Sticks.
For Intellivision and ColecoVision.
All this advanced technology made especially for your system!
Extremely responsive "fire" buttons on both sides for right, left, or two-handed use!
Long six foot cord!
Reinforced strain relief.
Thick-walled, high-impact ABS plastic (similar to that used to make football helmets.)
Amazing new switching technology means twice as many contact points for more precise direction changes!
More control! More speed! More points!
Remember the name, or you can't win the game!
THE POWER-STICK PRECISION JOYSTICK
HIGHER SCORES!
(Need we say more?)
Smaller, more playable size. No hand fatigue!
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dedicated to the science of fun!

Screen plays

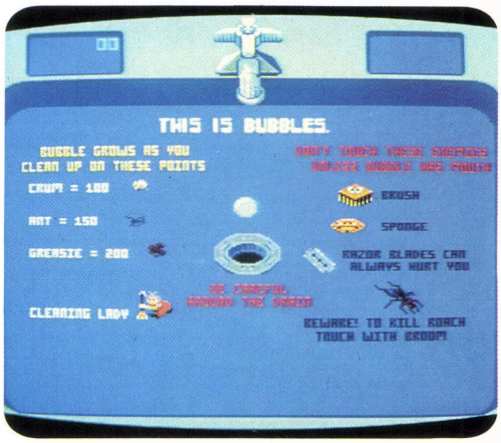
Bubbles and Bagman:

By Michael Blanchet

BUBBLES

As more and more games are designed, there remain proportionately fewer and fewer available topics and storylines. Thus, scenarios no one would even consider a year ago are popping up as the basis of many new coin-ops. Personally, I look on this development as a boon to the gamer. Manufacturers are almost forced to look in directions other than the maze and shoot-em-up categories and they have thrown everything they can muster at us lately. Everything *including* the kitchen sink, which has made the jump from kitchen to video game in *Bubbles*.

Bubbles appeals to at least two of the more popular phobias—the fear of insects and the fear of dirt. You battle ants and roaches as well as a grime wave consisting of grease spots, crumbs and razor blades among other things.



Household Pests

As the Bubble in our story, your job is to run over the ants, crumbs and grease spots while avoiding the razor blades, brushes, roaches and sponges (sponges are the guys that look like very angry clams). As you roll over any of the aforementioned group, you'll grow and eventually sprout a pair of eyes and mouth. Once you crack a smile you are permitted to bump both sponges and brushes.

Razors must be avoided at all times. Roaches can only be killed with a broom. Where do you get a broom? From the cleaning lady, of course. Shortly after the beginning of each round she'll pop up out of the drain. To arm yourself with the broom you must touch the bubble to the bristles. Easier said than done because you must not come into contact with any part of the cleaning lady first or your character will swallow the broom. So be careful.

With broom in hand, you can safely confront and kill any roach that tries to sneak its repulsive self out of the drain. Be careful here. If the broom doesn't make direct contact with the bug, you'll pop. Your best bet is to stay still once you have the broom. Move close to the drain, broom facing front and wait for the roach to come to you.

Mom probably taught you to do a thorough job when you clean. "You missed a spot", she would say as she handed you the Comet. Well, you can forget about what mom said here. Being too meticulous will cost you points and a game life.

Throughout most of the game you

Continued on page 94

Even the kitchen sink

BAGMAN

Now let me get this straight. A bag lady is someone who wanders aimlessly about the city streets with all her worldly possessions stuffed into a Bloomingdale's sack. A bagman, on the other hand, is an escaped convict who just happened to stumble upon an abandoned mine that is chock full of gold. *Bagman* is also an arcade game and one of the first coin-ops to come from, of all places, France.

If the title *Bagman* hasn't gotten you to at least try this game, the action will. *Bagman* is like *Tutankham*, *Donkey Kong* and *Pac-Man* all rolled into one. What's amazing is that though it borrows in concept from many games, it has emerged with a personality all its own.

Sacking Out

As Bagman (the fella wearing the striped suit), your job is to collect as many gold sacks as possible from the mine and bring them back up to the surface, at which point you plop them down in your trusty wheelbarrow. Naturally, someone has to try to stop you. In this case it's a pair of cops. Fear not—they're none too bright.

Unlike most games where the *modus operandi* is pretty much

spelled out for you, *Bagman* can be attacked in a number of different ways. In each round of play you have full run of three separate but connected screens, each of which shows a cross-section of an intricate underground mine. To reach the gold you'll have to climb ladders, ride elevators and railroad cars and tramp down long corridors. If certain areas seem inaccessible at first, a pick ax

will come in handy there.

Before I impart any strategic advice, I'd like to say something about scoring. At center screen you'll notice a bonus timer. If it reaches zero you can scratch one Bagman. Each time you place a money sack in the wheelbarrow the timer resets to 4000. At the same time the amount shown on the clock is credited to your score. In essence, every time you stash a bag you up your score and extend your available playing time. Points are also automatically added to your score for every moment your Bagman remains alive. So, let's assume you have brought three bags to the surface. You got 3,000 for the first, 2,300 for the second, and 1,700 for the last. But instead of depositing one and then heading back for another, try carrying all three to the surface before putting any of them into the wheelbarrow. Granted, this may take some time, and you may only get 1,000 points for the first bag—but the next two will be worth 4,000 points apiece.

Stockpiling bags on or near the surface makes good sense not only from the points aspect but also from a survival standpoint. Let's say you must make a long trip for a sack. You're almost there but time is running out and the cops are right on

Continued on page 94

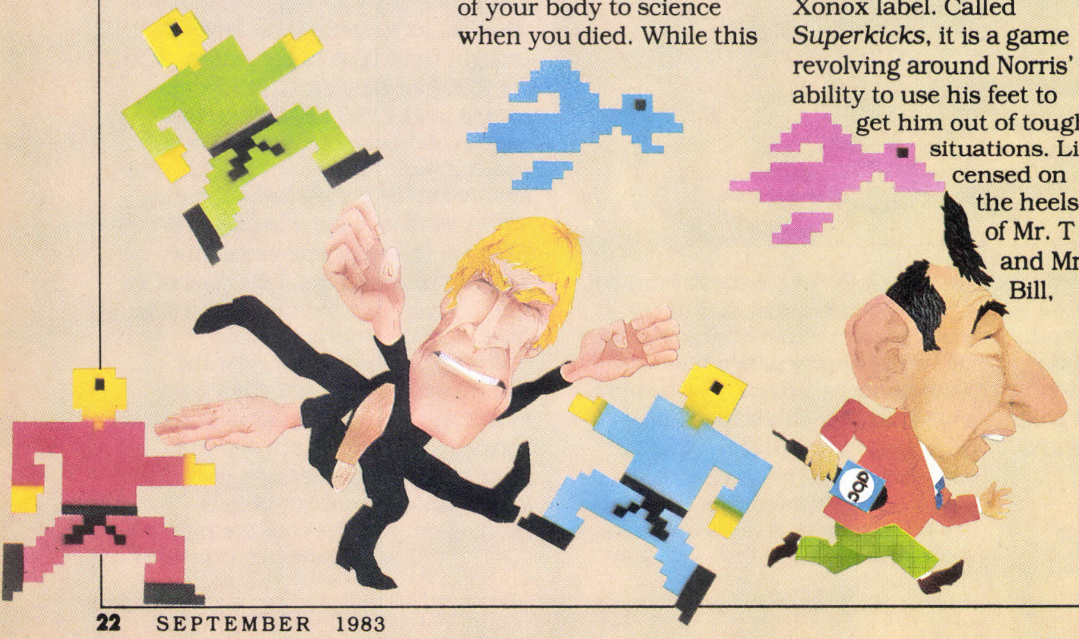
Compucroon; games are people, too

With A Song In My CPU

In the early Sixties, we (that's the collective we, not the editorial we and is meant to include everyone in the world) were pretty darned easy to please. All it took was a talking horse to make us draw in our breath and say "Oooh!" and "Ahhh!" and "Gosh!" Then we all found out that the horse wasn't doing the talking after all. It was just someone doing a pretty impressive horse impression. Nowadays it takes a lot more than a mere "OK, Wilbur" to impress us. Something like a singing computer, for example. And there is one. Johan Sundberg, a Swedish acoustics expert, has figured out how to program a computer so that it sounds like a human voice. His song synthesizer consists of a computer attached to a modified organ keyboard that is then hooked to a speaker. Sundberg makes the computer sing by programming it to select pitches and tones. We don't know if the computer is still answering the phone, but if it is, you can reach it at 900/410-8383. If that number is no longer working, here's a medley of the tunes it might have sung: "CRT For Two," "Someday My Print Will Come," "CPU In September" and "Software Over the Rainbow."

Body By K-Tel

You used to leave parts of your body to science when you died. While this was fine for those who lived, it certainly didn't bring in any big bucks for you or yours. Licensing your whole body to video games does mean a positive cash flow and so a lot of people are doing just that. K-Tel (the folks who brought you records like "The Greatest Hits of the Middle Ages") have licensed Chuck Norris and plan to turn him into a video game on their Xonox label. Called *Superkicks*, it is a game revolving around Norris' ability to use his feet to get him out of tough situations. Licensed on the heels of Mr. T and Mr. Bill, this can only mean that, because they've run out of movies and books to license, video game companies are going to start going hog wild and licensing anyone and everyone that comes along. A few of the ones we are *not* anxious to see released include: *Howard Cosell, The Game*, which features Howard carrying an umbrella and talking about the Kentucky Derby; *Liberace*, featuring Liberace sitting at a piano and smiling in screen one and in screen two sitting at a piano with a candelabra and smiling and, finally, *Orson Welles* featuring a thin man in the first screen and in subsequent screens a fat man selling wine on TV.



These Are Your Lives

You would think that the computer age would have left the Dark Ages behind, but nooo. Instead of relying on logic and fact to run everyday lives, people are still consulting the stars. Only they're not content with Jean Dixon's predictions, or Sybil Leek's hermetically sealed envelopes foretelling which presidents will be assassinated in what year. They may still like astrology but they want their astrology high tech. At least in India, they do. And that's why Astrocomp is so popular. Astrocomp is run by Krishan Singhal and is presented as the

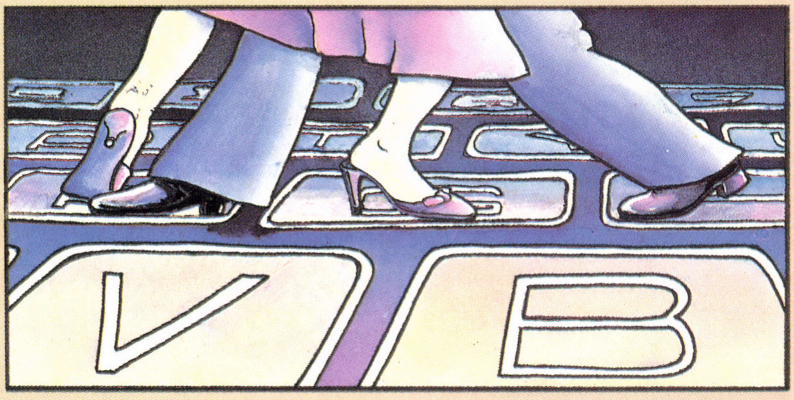
Glitches

Sultan of Wing

No matter how sophisticated electronics become there's something to be said for pigeons. They don't require instructions in order to put them together; they don't go down and leave your company up in the air for hours until someone gets the CPU working again; you don't have to plug them in and you don't have to update your models every other week when someone in the Santa Clara Valley comes up with yet another state-of-the-art bird. This is probably why a company as wealthy and high tech as Lockheed Missile and Space decided to use them in a project it undertook. Engineers needed working copies of designs quickly at the Felton, California test base which was up a mountain. But how to get them there? Lockheed tried couriers but that was expensive and slow. So they installed a printout system and pigeons carried the designs up saving Lockheed 12,500 bucks. Best of all, the birds will never form a union and demand higher pay. They're satisfied with birdseed.

Cardboard Keyboard

At last, a state-of-the-art keyboard which eliminates typos, loss of data and valuable stories and the prohibitive cost of an actual computer. It's the Computer Practice Keyboard. This handy tool helps those who are afraid of computers but who feel obligated to at least learn the key functions and practice their fingering. The Practice Keyboard comes in models that follow the keyboard pattern of most popular personal computers including Apple, Atari, TRS-80 and IBM. And one of the best features about it is that no matter how many incorrect keys you press, you will never lose a single story you write. We understand that the company will be coming out with a number of cardboard peripherals such as a printer (no paper necessary) and disk drive and a practice joystick all totally portable, inexpensive and without any practical use whatsoever.



"astrological computerized consultant."

According to *The New York Times*, he can cast detailed long-term horoscopes using his computer in a fraction of the time it takes your ordinary, old fashioned, manual fortune tellers. Astrocomp already has a client list of about 500 businessmen. Singhal plans to introduce a new program which will predict daily events in a life up to one year in advance. This service will cost 36,000 rupees or $3,800. According to Hindu religion, people are reincarnated so the obvious question is: Does the $3,800 (or 36,000 rupees) cover all your incarnations (including dessert) or is it *a la carte* with each life being paid for separately?

Ben Hillman, Nick Fain, Don Mathe, Peter Kuper, Ben Hillman

ELECTRONIC FUN MAGAZINE'S

top 10

HOME

1. MS. PAC-MAN (A) (Atari)
2. CENTIPEDE (A) (Atari)
3. KEYSTONE KAPERS (A) (Activision)
4. PEPPER II (C) (Coleco)
5. FROGGER (A) (Parker Brothers)
6. ENDURO (A) (Activision)
7. DONKEY KONG JR. (C) (Coleco)
8. ZAXXON (A) (Coleco)
9. SWORDS & SERPENTS (I) (Imagic)
10. PHOENIX (A) (Atari)

ARCADE

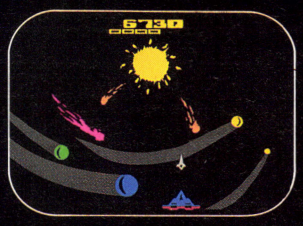
1. POLE POSITION (Atari)
2. MS. PAC-MAN (Midway)
3. MILLIPEDE (Atari)
4. GALAGA (Midway)
5. SINISTAR (Williams)
6. FRONT LINE (Taito)
7. CONGO BONGO (Sega)
8. MR. DO! (Universal)
9. CENTIPEDE (Atari)
10. ZOO KEEPER (Taito)

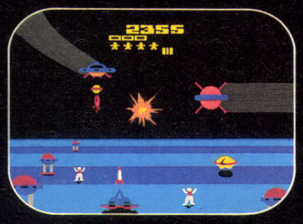
The arcade Top Ten courtesy of REPLAY MAGAZINE, the coin-op Bible. The home games Top Ten was compiled by contacting retailers across the country. (A) stands for Atari, VCS, (I) for Intellivision and (C) for ColecoVision.

©Neumann 82

..COME IN, MOONSWEEPER...ARE YOU THERE?...COME IN

"...Star Command to all video game players...we have confirmed reports that U.S.S. Moonsweeper was attacked by an alien transport... Moonsweeper last sighted clearing aurora flares on way to rescue Malanium miners on Lunar Alpha Red...she lowered shields, located Alpha Red, and began final approach...we do not know if Moonsweeper was forced into a mining tower





...or was shot down heading for acceleration rings...we do know several enemy destroyers were shot down before communications went dead...proceed to nearest video store and attempt to make contact with Moonsweeper...situation critical...repeat...situation critical...over..."

MOONSWEEPER™ BY IMAGIC

For Atari® 2600.™ Soon for Atari® 5200,™ Intellivision,® ColecoVision,™ VIC-20,™ Atari® Computers and TI-99/4A.

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READY

Fasten your seat belts

Flight simulation—the ultimate video game

What feels like a plane, sounds like a plane, has the same instruments as a plane but never leaves the ground? If you said the latest in flight simulators you're right. Flight simulators are used to train pilots and astronauts. They mimic the thrill of flying with none of the real dangers. Just think, if the Wright Brothers had had flight simulators at Kitty Hawk, the plane might never have been invented.

By Suzan D. Prince

In a speech to a group of math and science students visiting Disney's EPCOT Center last winter, President Reagan said, "Many young people have developed incredible hand, eye and brain coordination in playing video games. The Air Force believes these kids will be outstanding pilots . . ."

Now don't get our chief executive wrong. Scoring tops in your neighborhood at *Zaxxon* will *not* make you jet commander material. However, the issue of whether flight simulation technology in the arcade can help the military has been the subject of some discussion in the Pentagon; some officials believe that in terms of personnel preparedness, the future of real-life commercial and military flight training is inextricably linked with the ever-advancing, ever-more-sophisticated graphic, animation and interactive capabilities of home computers and games. In turn, the advances filtering down from the Space Shuttle and other major projects are expected to result in the most exciting and realistic future home entertainment yet.

It all started with a memo entitled "Thoughts Concerning Home Video Game Operations on Enhancing Combat Pilots' Skills," prepared by Air Force Lt. General John T. Chain Jr., the top Air Force general dealing with flying missions. The memo, which a Pentagon spokesman said was the source of the President's recent comment, linked skills gained in video games to the pilot's need for sorting out "critical, time-sensitive decisions based on multiple bits of rapidly changing information visually displayed on the CRT (cathode-ray tube)."

While the Air Force is considering experimenting with computer games as flight training devices, the Army got into the act on the ground two years ago with a modified version of Atari's *Battlezone* for weapons training. Currently, a Japanese manufacturer has the first order from the U.S. Army for games which simulate tanks in battle, to be used in classrooms to teach new GIs painlessly and effectively how to operate tanks and missiles. The Army is plenty serious about pursuing such training—the official in charge of the Training Support Center in Ft. Eustis, Virginia carries the title Action Officer for Video Arcade Technology. Airmen, will be taught air-to-air and ground-to-ground refueling methods.

No Reset

Despite professional flight simulation's analogy to the "ultimate" video game, the science of simulation is deadly serious business—a pilot simply can't insert another quarter and hit the reset button at 30,000 feet over St. Louis—and monstrously expensive besides. At prices ranging from $6 million to $15 million and more, flight simulators are used by every commercial U.S. airline as well as by the military and the National Aeronautics and Space Administration. Air safety has improved significantly since the Federal Aviation Administration (FAA) approved using time in a simulator to replace a large portion of the training that pilots once received in actual aircraft. The systems can simulate situations such as engine fires, control failures, weather hazards, conflicting traffic and wheelless landings, which pilots could never practice before.

"These computerized gizmos are the only way we can put classroom theory into practice without losing lives," says an FAA spokesman.

For all their exorbitant cost, flight simulators can also save organizations a ton of money. According to a recent report in *Aviation Week and Space Technology* magazine, it costs $7,300 an hour to fly a Boeing 747, including fuel, maintenance and other factors. United Airlines expects to save some $8.5 million this year by using flight simulators, the report says. Flying Tigers, the world's largest air cargo carrier, previously leased $80,000 worth of simulator time per month. The carrier now has two machines of its own that are expected to pay for themselves in four years, partly because the company will lease $1 million of training time per year to other airlines.

Nothing inside the cockpit of a flight simulator hints that it is a land-bound machine swaying back and forth inside a laboratory or classroom. The instrument panels appear correct in every detail, and all the instruments function. The windows show intricate computer-generated images of surrounding landscapes—runway, airport,

Lead Illustration: Jane Beaulieu

lights, clouds and sky. Mounted on hydraulic pistons, the cockpit can be pitched in any direction so fast that what feels like the buffeting of wind and the forces from turning, acceleration and climbing make seat belts necessary. The sounds of flight are all around, from the synthesized whine and roar of the jet engines to the splatter of raindrops.

"You'll hear the screech of tires on the runway approach and feel the bounce of the landing," says Steve Nesbitt, a spokesman for NASA's Johnson Space Center in Houston. No video game can effect those motions, he says, but someday soon, with memory getting cheaper, the armchair flier may be able to experience everything a jet flight has to offer—except, thankfully, the tray lunch.

Model Flight

The heart of the modern simulator is a powerful minicomputer, commonly Digital Equipment's VAX series, programmed with all the characteristics of the aircraft it mimics. This software flight-dynamics model is based on measurements of the plane's ability to maneuver under various conditions. For example, the aircraft flies differently depending on altitude and the load it is carrying. Based on data of the aerodynamic qualities of the plane, its behavior can be predicted under unusual circumstances—such as when the wings ice over. The minicomputer also contains information on the mechanical and structural systems of the plane and reacts appropriately if their limits are exceeded. Engines will "malfunction" if given the wrong fuel mixture, and landing gear will "break" if a touchdown is too rough.

A simulated flight can be programmed to include mechanical difficulties—an obscure electrical short, perhaps, that affects instrument readings. Then the crew must identify and compensate for any failing. Equally important in the computer software is the realism of simulated weather conditions both in the air and on the runway. When the pilot makes a move with the controls, the computer must take all these factors into account and simulate the resulting attitude of the aircraft—all within fifteen-thousandths of a second, below the threshold of human perception. The computer also records a sizable segment of each training session, and it is able to give back an instant replay.

Today's most advanced computer graphics displays are made by Evans & Sutherland in Salt Lake City. Computer imagery development there is headed by Robert Schumacker, a member of the original NASA group that created a space simulator about 15 years ago. His engineering team's newest achievement is the SP3T, a day-and-night display with innovative hardware that can add texture to the surfaces of the land, water and sky in its scenes. Another advanced daylight system is the company's CT5 which shows smoothly shaded objects that look more three-dimensional and less like figures in a cartoon. And unlike the terrain maps that were televised for early flight simulators, the expanse of the computer-synthesized "gaming area" can cover hundreds of thousands of square miles.

"In the simulation world, a pilot needs all the lifelike signs, or perception cues, he can get," explains Bruce Fox, director of marketing. Thus, Evans & Sutherland generates digital computer images based on film, maps and photographs of actual terrain and ground objects. "We can simulate nighttime and daytime," Fox says, "and based on client specifications, we can recreate any airport anywhere, or a series of airports for practicing takeoffs and landings."

The level of detail varies with the cost of the project and the client's

Computer-generated A-10, F-16 and MAC Harrier II aircraft on the CT5.

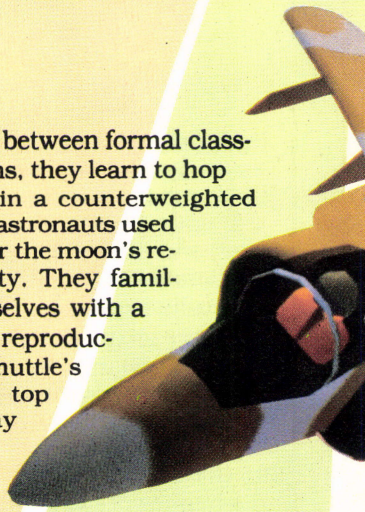
Photos: Evans & Sutherland and Rediffusion Simulation.

needs, he adds. "While the objective is to make the display as lifelike as possible, each dimension of detail means using another roomful of computers and will of course be that much more costly. So the airline has to decide what's important—perhaps not every single blade of grass, for example, but the total wind effect on grassy areas." Since each simulation program is custom-built, it takes Evans & Sutherland an average of 18 months to deliver a single project. Fox adds that the jobs aren't particularly creative. "There are no Michelangelos here, just hardcore hackers. Everything is done strictly from a technical, precise standpoint of given information. We're essentially number crunchers."

The Space Shuttle simulator at the Johnson Space Center cost hundreds of millions of dollars to assemble and operate, says Nesbitt. Here, the hardware needed to process space flight simulation data takes up a large building. "We have the most complex flight simulator in the world," he continues. "All of the instruments are precise replicas of those used in actual space flight because the simulator must perform exactly as it would in flight." Astronauts, who train for an average of two years, experience orbiting, weightlessness, and learn how to deploy satellites and maneuver the shuttle's robot arm.

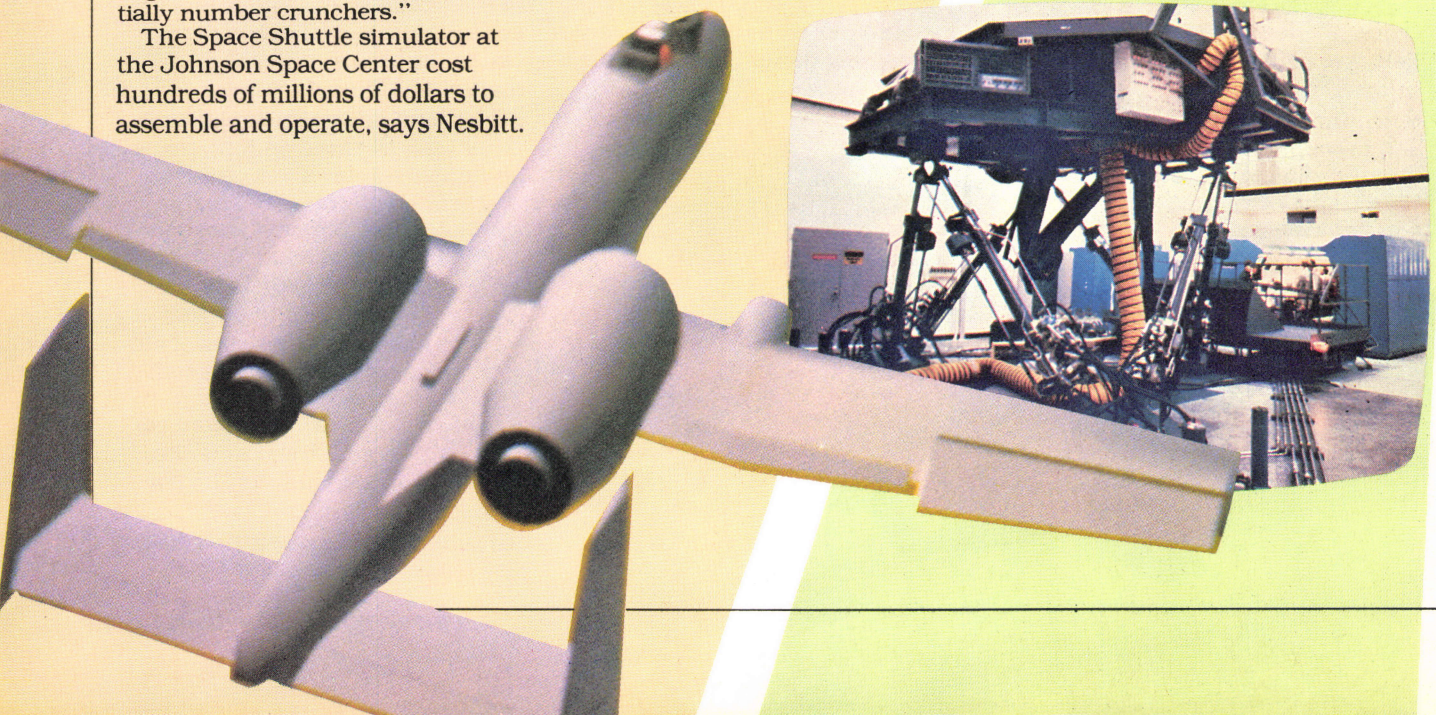
Camp Count-Down

If you're between the ages of 12 and 14, bright enough, and lucky enough, you could wind up among the 1,000 or so youngsters chosen each summer to participate in the most intense civilian simulation of all—a six-day session at NASA's Space and Rocket Center Museum at Huntsville, Alabama. The U.S. Space Camp Program, as it's called, puts kids though the rigorous paces of computer-assisted science instruction. In between formal classroom sessions, they learn to hop and bound in a counterweighted sling Apollo astronauts used to prepare for the moon's reduced gravity. They familiarize themselves with a functioning reproduction of the shuttle's cockpit and top off their stay with a full-fledged simulated shuttle flight, learning to feel comfortable in a chair that rolls, pitches and yaws to duplicate the gyrations of a craft maneuvering in space.



Over the next two years, the program will expand. "Current plans call for a tenfold increase in acreage," reports camp and museum director Edward Buckbee, formerly with the public affairs office at the nearby Marshall Space Flight Center. "We'll be building permanent dormitories (students are currently housed at the University of Alabama), a learning center, campgrounds and a shuttle park complete with a full-size model of the orbiter." (For applications and further information, contact Lee Sentell, Director of Public Relations, Space and Rocket Center, Huntsville, AL 205/837-3400.)

For kids of all ages, meanwhile,



the choice of current state-of-the-art home computer flight simulations is broad. Among the latest creations, *Flight Simulator* from Microsoft and Sub-Logic Inc. for the IBM PC provides possibly the most realistic scenery yet, fully duplicating New York's Kennedy Airport runways at night. Other popular packages include Datasoft's *Space Shuttle Pilot* for the TRS-80 and Apple II, and *747 Landing Simulator* for Atari computers from the Atari Program Exchange.

Coming to the arcades are elaborate new interactive videodisc and three-dimensional simulations from Sente and Sega which employ sophisticated computer animation and graphics, while one independent builder recently showed a prototype of *Saker-One*, a seven-foot wide capsule made to resemble the cockpit of a spaceship. Inside, TV screens show enemy space craft which the "pilot" tries to destroy with lasers. A 30-horse-power electric turbine engine holds the "cockpit" aloft on a shaft of air, moving at up to 140 mph. Atari is also researching and developing similar environmental games which create an entire video world around the player, such as duplicating the thrill of a roller coaster ride within the confines of a small booth. For this new generation of coin-ops, Atari is expected to utilize its year-old partnership with Lucasfilms and that company's special effects expertise.

In the more distant future, perhaps five to 10 years down the road, Bruce Fox of Evans & Sutherland envisions home versions of the kind of smooth-motion graphics technology now used in professional training displays.

"Home games will improve tremendously in terms of crisp detail and clarity of scenes," he says. The demand for such game-playing dynamics exists now, he believes, but the technology is still far too expensive.

Fox muses, "If our company designed games—which it does not—our sophisticated technology would produce the ultimate video game for millionaires; it would be that expensive.

"However, if we were to set up our CT5 simulator as a tennis game, for example, the level of detail would be so good and fluid and lifelike that instead of stick figures, you'd see the Wilson name on Jimmy Connors' racket and the grimace on his face if he loused up a serve."

Home Again

Looking for flight simulation games you can play on your home system? The selection is still pretty small (under a dozen), but as home computer capabilities increase along with the popularity of home piloting, you can expect to see more and more games like these:

*For Apple computers: *A2-FS1* (Sublogic), *Flight Simulator II*, *Air Traffic Controller* (Avant Garde), *Controller* (Avalon Hill). *A2-FS1* is an Apple version of *Flight Simulator* for the IBM PC.

*For Intellivision: *B-17 Bomber* (Mattel) gives you the bombardier's view of a combat run.

*For Atari computers: *747 Landing Simulator* (Atari Program Exchange/APX), *Jumbo Jet Pilot* (Thorn EMI), *Airline* (Adventure International), *Blue Max* (Synapse), *Pilot* (Artworx).

*For the IBM PC: *Flight Simulator* (Microsoft). The state of the art in home simulations.□

Screens left to right: SP3T computer adds realistic out-the-window scenes to helicopter flight training. (Photo: Evans & Sutherland, Rediffusion Simulation). Exterior and flight-deck views of Space Shuttle Simulators at Johnson Space Center in Houston (Photos: NASA).

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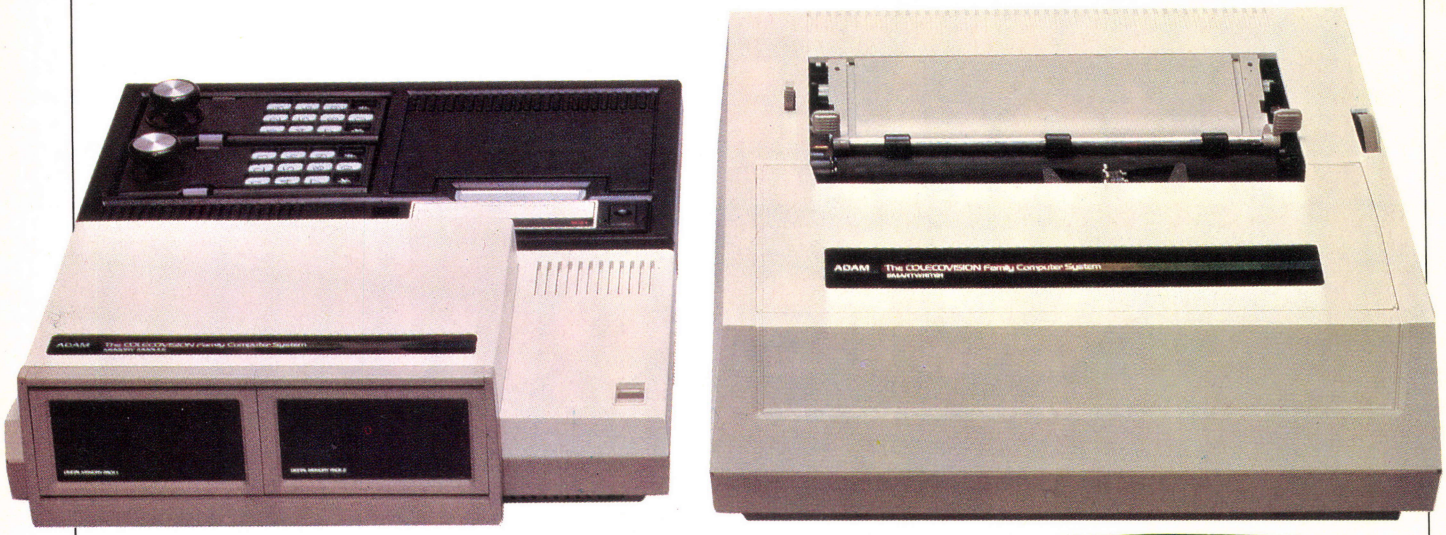
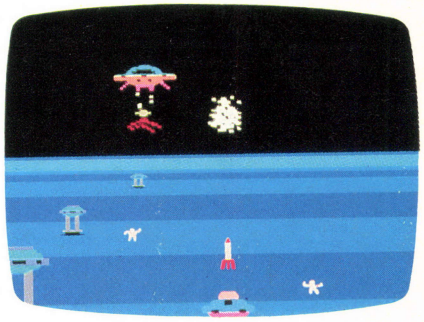
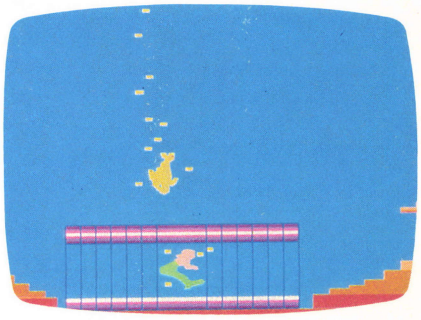
Atari, Mattel, Coleco...

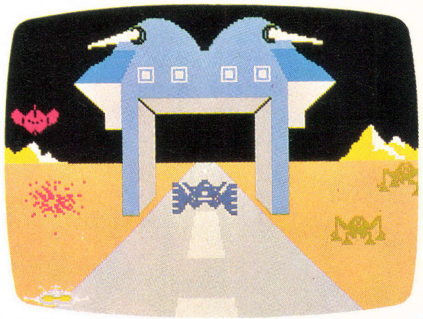
How the add-ons add up

The Big Three are finally bringing their computer keyboards to market. Now owners of a VCS, Intellivision or ColecoVision will be able to turn their game systems into full-fledged computers simply by adding on an add-on. While Atari does not yet have games specifically designed for its Graduate computer, both Mattel and Coleco are coming out with new carts which take full advantage of the increased memory the keyboards provide. Here's a rundown of what the systems offer, plus some more news about computers from Tomy and add-ons for the Vectrex system, to name a few.









You've read about them, you've heard about them—both the truth and the rumors—and now you can finally buy them. The computer add-ons for the Atari 2600, ColecoVision and Intellivision are here. Name changes, format changes and other false starts are now history—the Atari folks have finally decided to name their 2600 computer add-on the Graduate, Mattel sticks with the Entertainment Computer System, and Coleco creates a new generation with Adam.

How powerful are the new systems? Atari's weighs in at 8K, expandable to 32K of RAM; Mattel's system adds an extra 2K to Intellivision, expandable to 64K; Coleco's Adam brings ColecoVision up to 80K, expandable to 144K. All the systems will have software designed especially for them, and Adam will allow owners to play ColecoVision Super Games without the addition of a Super Game Module (which at presstime, had been discontinued due to problems in the mass manufacture of the wafer drive). As this issue went to press none of the units were available for full-scale, hands-on evaluation, but we'll give each computer a real workout as soon as we can. In the meantime, here's a rundown on what they offer, according to the manufacturers.

Of the three systems, the Adam breaks the most new ground in video game expansion. Sure, you want a computer. But you say you also want a printer? You also want a word processor? You also want to play ColecoVision Super Games? You've got them all! And how many trips to the store does it take to acquire all this stuff? Just one. The Adam system comes complete with all this paraphernalia, all for $400—*if* you already own a ColecoVision. If you don't, the entire system comes freestanding for $600, and you can play all the ColecoVision games.

The Adam Family

In addition to all this hardware and software, there are some other features of the Adam that make it a highly desirable machine. The printer, for example, is a letter-quality daisy wheel unit. It prints at 120 words per minute on any paper up to 9½ inches wide. As with all daisy wheel printers, the typeface is interchangeable with several

Up and Adam: The Adam with printer, keyboard and digital data drive. The three games are (from top) MOONSWEEPER (Imagic) for Atari, Mattel and Coleco; FATHOM (Imagic) for Mattel and Atari and SUPER BUCK ROGERS (Coleco) for Adam.

available on the market.

The word processor, dubbed SmartWriter, is built in. Special function word processing keys are keyed right on the screen so you don't have to go back and forth to the manual. In addition, a typewriter-style margin set is also part of the graphic display. Editing functions are accomplished at the touch of a key, and the program includes an UNDO key to cancel any erroneous commands to the computer.

While word processing power will appeal to a large segment of the computer-buying public, the computing power of Adam is also impressive. Adam's built-in BASIC is Applesoft source code compatible. This means that many programs written in Applesoft can also run on the Adam, and vice versa. If this isn't enough, Adam is also CP/M compatible, and the most popular CP/M programs will be available on digital "data packs," the wafers that constitute Adam's data storage.

Later this year Coleco will have a disk drive for the Adam system.

Also coming later this year are a number of specialized programs including a Guide to Smart BASIC (a self-teaching program for BASIC language), Smart LOGO, electronic crayons, and Smart Filer. A modem will also be available.

As far as gameplay goes, both the Adam that hooks into the ColecoVision and the freestanding models will play all ColecoVision carts and all the Coleco Super Games in the new format. The Adam comes with *Buck Rogers Planet Of Zoom*, a Super Game. All existing ColecoVision expansion modules will fit into the Adam.

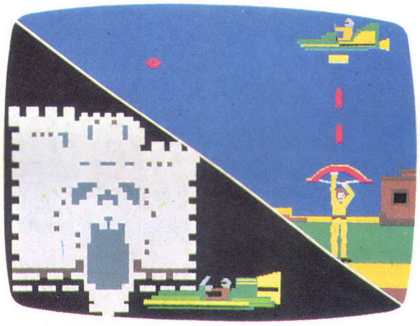
ECS For Me, See?

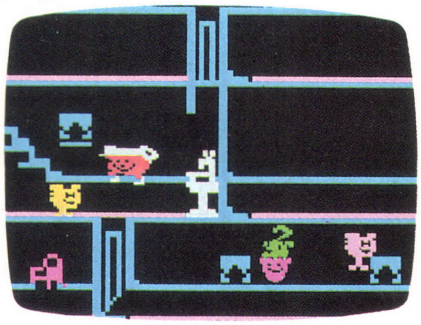
Mattel's Entertainment Computer System has a number of the Right Connections, as Mattel is calling all of the peripherals designed to snap right into the Master Component. The Intellivision Computer Adaptor plugs into the Intellivision itself and gives users all the power of the 16-bit microprocessor inside. The adaptor provides 2K of RAM and 12K of ROM and has built-in BASIC. In addition, it accepts a full line of Intellivision peripherals and accessories.

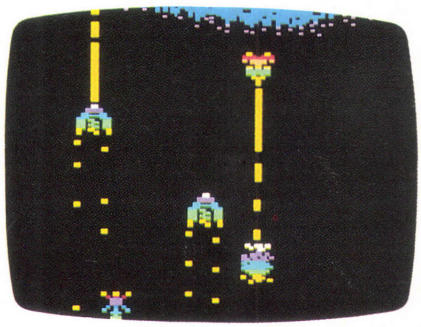
A 49-key keyboard comes packed with the computer adaptor. In addition to being able to write your own programs using the built-in BASIC language, you can also customize your game cartridges. Yes, gang, you can change aspects of video games. Areas that can be manipulated include graphics, skill level and game action.

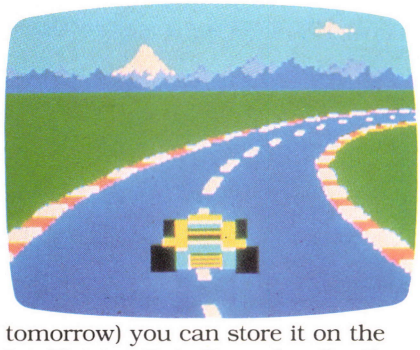
Should you write a program brilliant enough to be preserved for posterity (or even just until

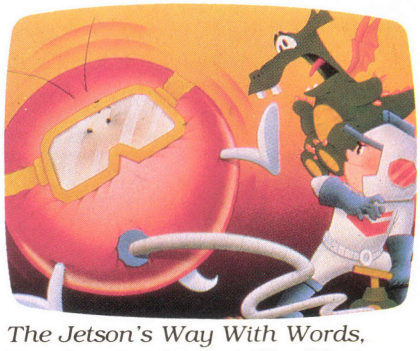
Below, the Entertainment Computer System from Mattel turns your Master Component into a fully functioning computer. Games (from left), MASTERS OF THE UNIVERSE (Mattel), KOOL-AID MAN (Mattel) and SOLAR STORM (Imagic for the 2600).

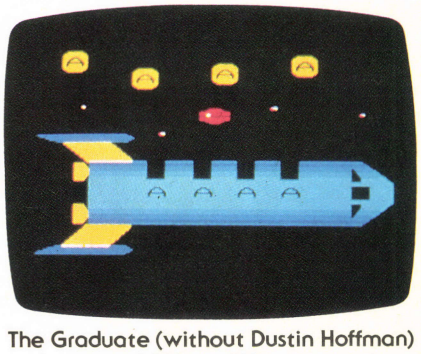












The Graduate (without Dustin Hoffman) makes your 2600 an 8K computer (expandable to 32K). Games include POLE POSITION (left), DIG DUG (center) and ALPHA BEAM.

tomorrow) you can store it on the Intellivision Data Recorder. Or, if you want to send samples of your computing prowess to relatives, use the Intellivision Printer. Both peripherals plug into the RS-232 interface located in the rear port of the adaptor.

If you find that 2K is simply not enough for the reams of things you plan to do with your computer, you can expand your Intellivision Computer to as much as 32K RAM and 12K ROM with the Intellivision Program Expander. The program expander is in cartridge form and plugs into the top of the computer adaptor.

A line of software will be out to support the computer and will fall into three areas—education, BASIC programming and Super Games. Among the educational offerings are *The Jetson's Way With Words, Number Jumble* and *The Flintstone's Keyboard Fun.*

BASIC programs include *Mr. BASIC Meets Bits 'n' Bytes, Game Factory* and *Program Builder.* In the first, you are guided in the writing of BASIC programs as you play three video games. The *Game Factory* lets you create your own video games by selecting from a menu of characters and graphics. The *Program Builder* is a sort of graduate course for which the prerequisite was *Mr. BASIC.* It gives you more advanced lessons in BASIC programming and teaches you more complex programs.

A Whole New Ball Game

Super Games include *World Series Baseball, Mind Stride* and *Scooby Doo's Maze Chase.* In *World Series Baseball,* you get the feel of actual TV coverage of your game. The "camera" pans across the playing field and there are split screen images of closeups of base runners. You can even practice being Billy Martin by programming in batting and pitching statistics for teams. One of the most intriguing variations is available on a cassette. This program provides the vital statistics for famous baseball players throughout history so that, using these, you can put together the best team in the world. Imagine being able to pit Satchell Paige against Babe Ruth!

The Atari Graduate computer is designed to do for the VCS what the Entertainment Computer System does for the Intellivision Master Component. The Graduate adds 8K of RAM to the VCS and has its own built-in BASIC. It is expandable up to 32K making it more powerful than the 400 computer and has a whole line of peripherals that interface with it including a 40-column printer, modem, cassette recorder and data drive with maximum storage of up to 128K.

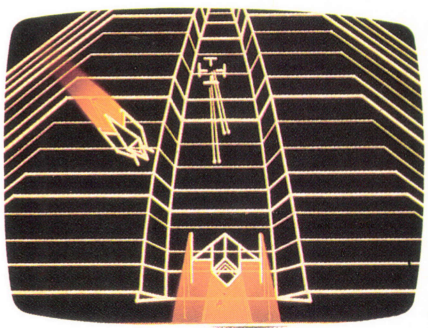
The Graduate also has a full color graphics display which allows you to generate sophisticated, high-resolution graphics in a wide spectrum of colors. It's very, very impressive.

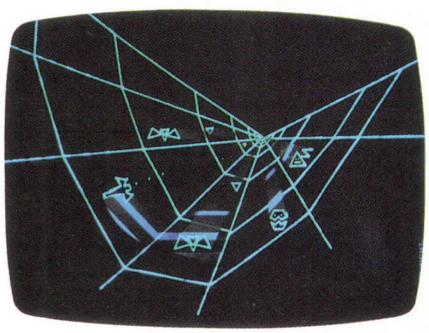
Software that will support the system includes *An Introduction to Programming*, which teaches the fundamentals of BASIC and program writing; *Children's Introduction to Programming; Typo Attack*, aimed at those who want to learn or improve their typing skills; *Donkey Kong*, about . . .well, we'll assume you know; *Robotron:2084* and *Caverns of Mars*. And, lest you think this is all frivolity and games, there are two home management programs: The Home Filing Manager and Family Finances.

Calling The Plays

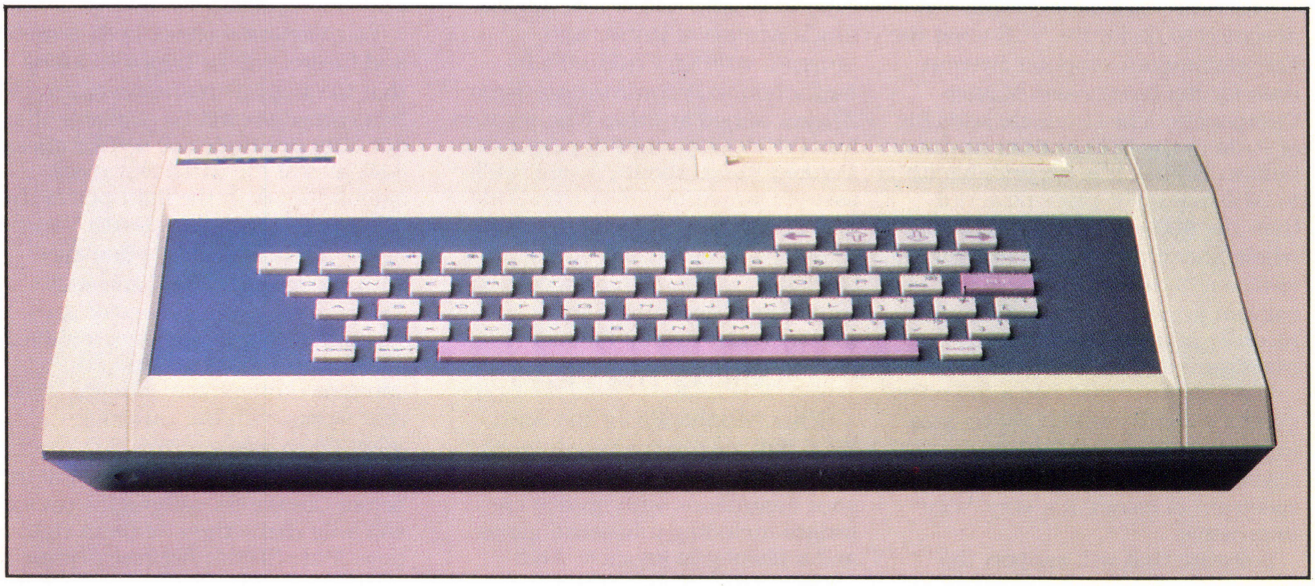
Other peripherals for the Atari 2600 include a voice recognition system which allows you to speak your commands with special cartridges including a baseball game, and a pistol-grip joystick. And, finally, there's the 2600 adaptor for the 5200 system.

You Vectrex owners, both present and future, will be happy to know that the Light Pen and several Light Pen cartridges will be available this fall. The pen itself will sell for about $40, as will the carts. But more astounding than the light pen is the Vectrex 3-D Imager, a Darth Vader-like face mask which, when used with special cartridges, turns the Vectrex into a true 3-D color game machine. The Imager is no red-blue sunglasses type of product. It contains a motorized spinning disk that works with the cartridge graphics to give a strobe 3-D effect. There will be four 3-D carts in stores before Christmas, although Vectrex will only name three of them right now: *Mine Storm, Narrow Escape* and *Crazy Coaster*. That last one is





With the new 3-D Imager, Vectrex graphics will approach the depth potential that STARHAWK (above) and WEB WARS (below) only began to tap.



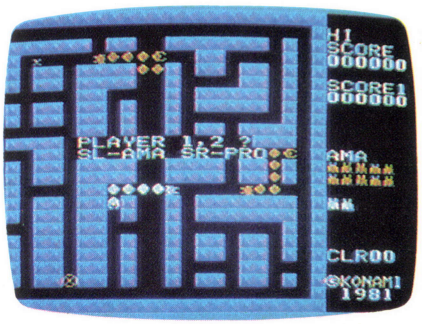
a first-person 3-D roller coaster ride of a game. The carts will sell for about $40 each.

Vectrex is also coming out with a computer add-on, though not until next year.

A newcomer to the computer arena is Tomy with its new Tomy Tutor, a compact little computer with 16K RAM (expandable to 64K) and 32K ROM. It's got raised keys in standard typewriter configuration and programming can be done in both upper and lower case. It's got some of the highest resolution (256 x 192 pixels) graphics we've ever seen and enables you to draw some pretty professional looking pictures as well as animate them. Peripherals include a data cassette recorder and voice synthesizer and it has three musical tones and an eight octave range also built in. It is supported by a full line of educational and game software.

If it seems as though all that's coming is new hardware, hold on. The fall lineup of new games stretches to over 50 titles, including arcade adaptations, built-in voice synthesis carts, educational games, movie themes and original works for almost every brand of existing game hardware, including home computers.

Atari appears to be leading the pack right now, with no less than 28 new titles coming out for Atari game systems by the end of the year. Scheduled for release on VCS carts in September are two arcade chart toppers, *Pole Position* and *Battlezone*. Also coming out this month will be Atari's adaptation of the movie *Krull*, featuring three different skill levels in which you can take the roles of the film's major characters, and *Donald Duck's Speedboat*, an obstacle course that also stars Donald's nephews Huey, Dewey and Louie.



This is the Tomy Tutor which already has 18 programs. Below it is one of them: JUNGLER from Konami.

Dig Dug We Must

October and November appear to be the big months for 2600 releases. Along with three new arcade translations—*Dig Dug, Joust* and *Moon Patrol*—Atari will bring out seven new games based on characters from Walt Disney films and Sesame Street: *Cookie Monster Munch, Alpha Beam* (with Sesame Street's Ernie), *Big Bird's Egg Catch, Miss Piggy's Wedding, Pigs in Space, Dumbo's Flying Circus* and *Sorcerer's Apprentice*.

Nor has Atari forgotten about 5200 owners. For September, the 5200 release list includes *Jungle Hunt, Ms. Pac-Man* and *Pengo*. October will bring *Dig Dug, Joust* and *Vanguard*, and November releases will include *Moon Patrol, Battlezone, Tempest, Road Runner* (Wile E. Coyote) and *Sport Goofy*. A translation of *Xevious* for the home screen is planned for sometime in the fall, and Atari will cap its game release schedule with *Robotron* in December.

The October introduction of Atari's voice synthesis/voice recognition module for the VCS will be accompanied by four new cartridges designed to exploit this technology: *RealSports Baseball, Star Raiders, Battlezone* and *Berzerk*. And two new 5200 carts—*RealSports Baseball* and *Berzerk*—will offer self-contained voice synthesis chips that don't require the addition of any outside module to work.

Atari computer owners will see 10 new game titles available on cartridges by the end of the year. They include *Donkey Kong Jr., Ms. Pac-Man, Pole Position, Joust, Pengo, Robotron: 2084, Football, Soccer* and *Tennis*—as well as *Eastern*

Continued on page 97

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Command CONSOLE

An incredible controller you can build yourself

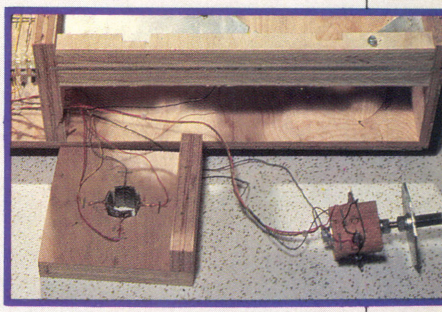
If you've been constantly disappointed by the joysticks that come with game machines and have found that replacement controllers still leave a lot to be desired, then perhaps it's time you built your own joysticks and super controller console. That's what 24-year old Charles Johnson of Tucson, Arizona did. Tired of making the best of what was sold, he resorted to simply making the best. The command console is his own invention.

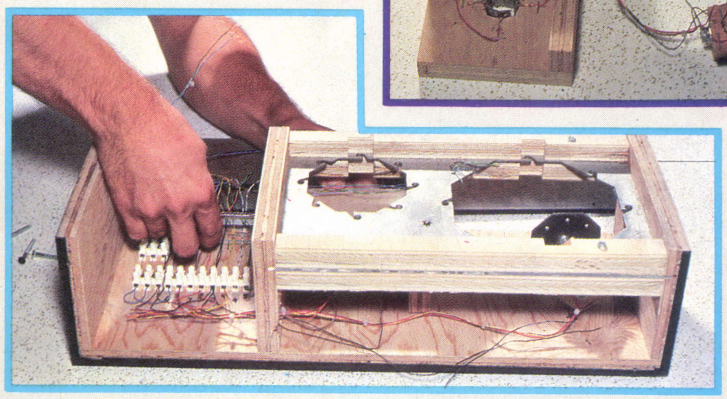
Charles assures you that no knowledge of electronics is necessary in order to build this totally customized console. All it takes is about 10 hours and about $85 to put together a controller that suits *you* perfectly because you built it to fit *your* needs. Charles even built the joystick handles himself without using any exotic components—just knobs from a dresser drawer and a bike handlebar grip. What follows is a pictorial essay which outlines the step-by-step procedure that Charles followed when building his Command Console. If you would like to sit down and actually put one together yourself, you'll need some more specific information. We've got what you need. For a list of parts needed and a set of blueprints, send a self-addressed, stamped envelope to Command Console, *Electronic Fun*, 350 E. 81st St., New York, NY 10028 and they're yours.

Photography: Jack Dykinga

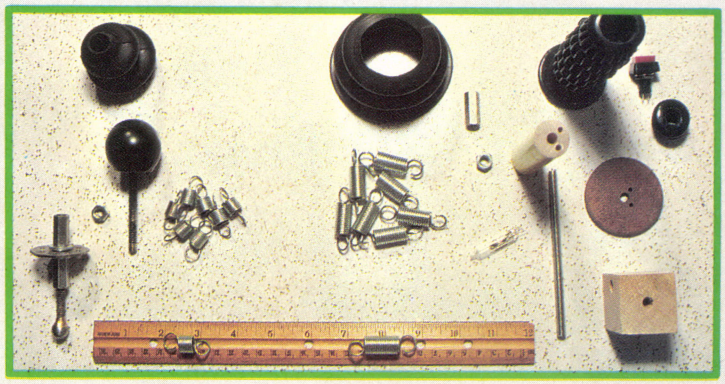
This is a picture of the main structure, contact plates and mercury switch holding block assembly. It's a simple carpentry job putting them together.

1



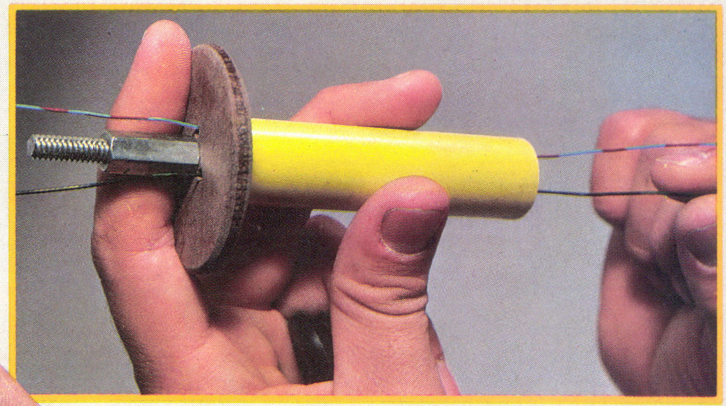


2 Insert and screw down the contact plate holding block to the main structure using regular countersink woodscrews.

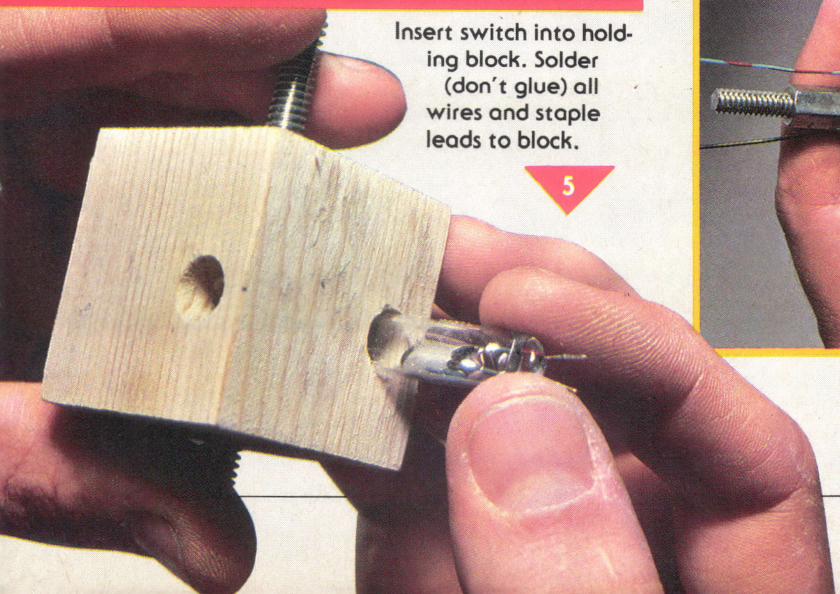


Parts for the controller handles. Use wire cutters to make a small opening in the wood circle of each spring. Get the toughest spring you can find that can still be stretched by hand.

3



4 Glue a 4 inch piece of ⅞ inch dowel (a piece of broomstick happens to be just this size) to a ¼ inch piece of masonite and run 1½ foot wires through both.

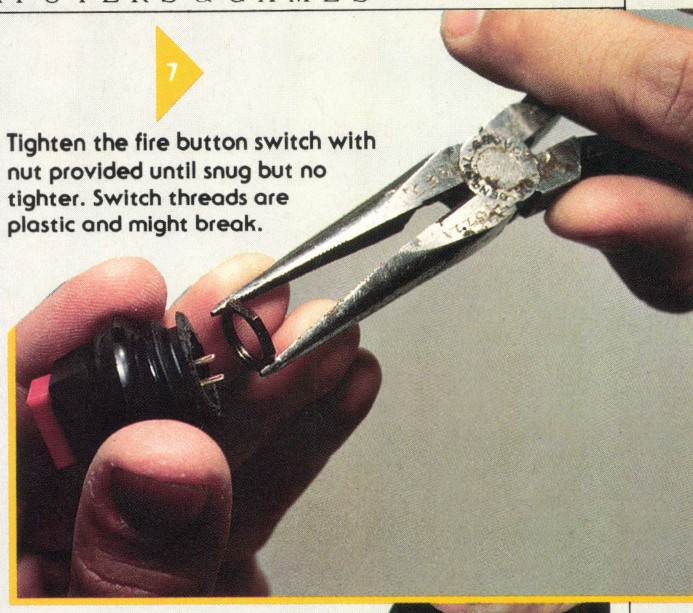


Insert switch into holding block. Solder (don't glue) all wires and staple leads to block.

5

7

Tighten the fire button switch with nut provided until snug but no tighter. Switch threads are plastic and might break.



6

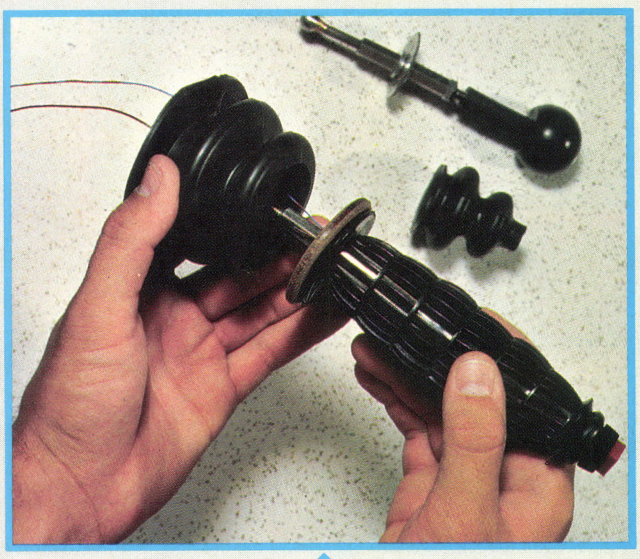
Joystick fire button switch and retaining ring cut from bicycle handlebar plug. Don't make the plug hole any bigger if you can help it. Force the end of the switch through. It should fit snugly.

8

Fit the fire button switch into the end of the handlebar plug, then insert the dowel/masonite assembly with wire leads extending 2" outside. Solder wires to fire button.

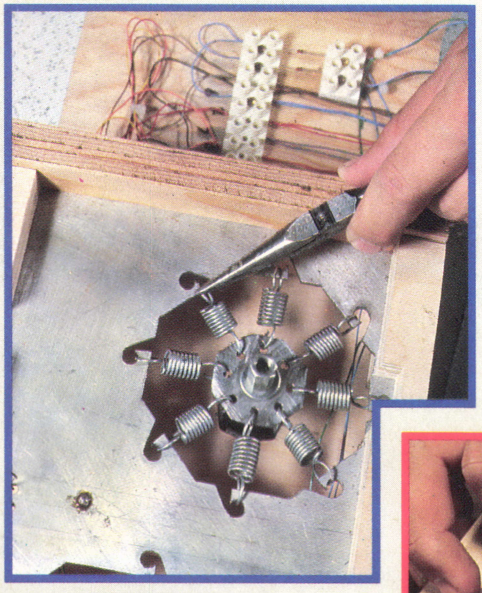
9

The ballgrip and fighter pilot joystick handles. The two boots in the middle were actually one boot cut in half. Use the smaller portion for the ballgrip stick.



10

Insert bottom of fighter pilot joystick into the larger of the two boots. Make sure the hole in the boot is smaller than the flange on the joystick.



11

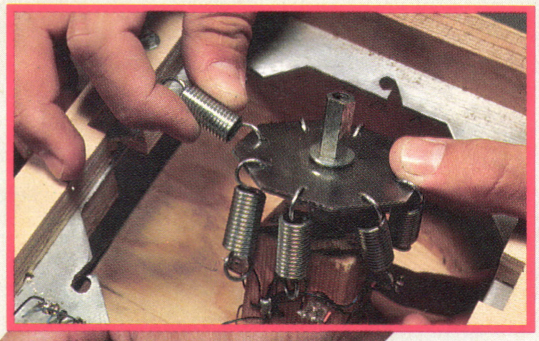
Loading the ballgrip spring assembly. The top of the grip has to be unscrewed in order to put on console lid.

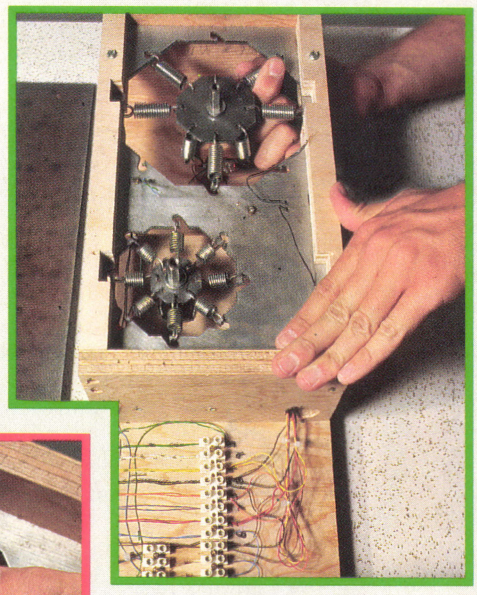
12

Loading the pilot joystick spring assembly. The mercury switch block has already been assembled.

13

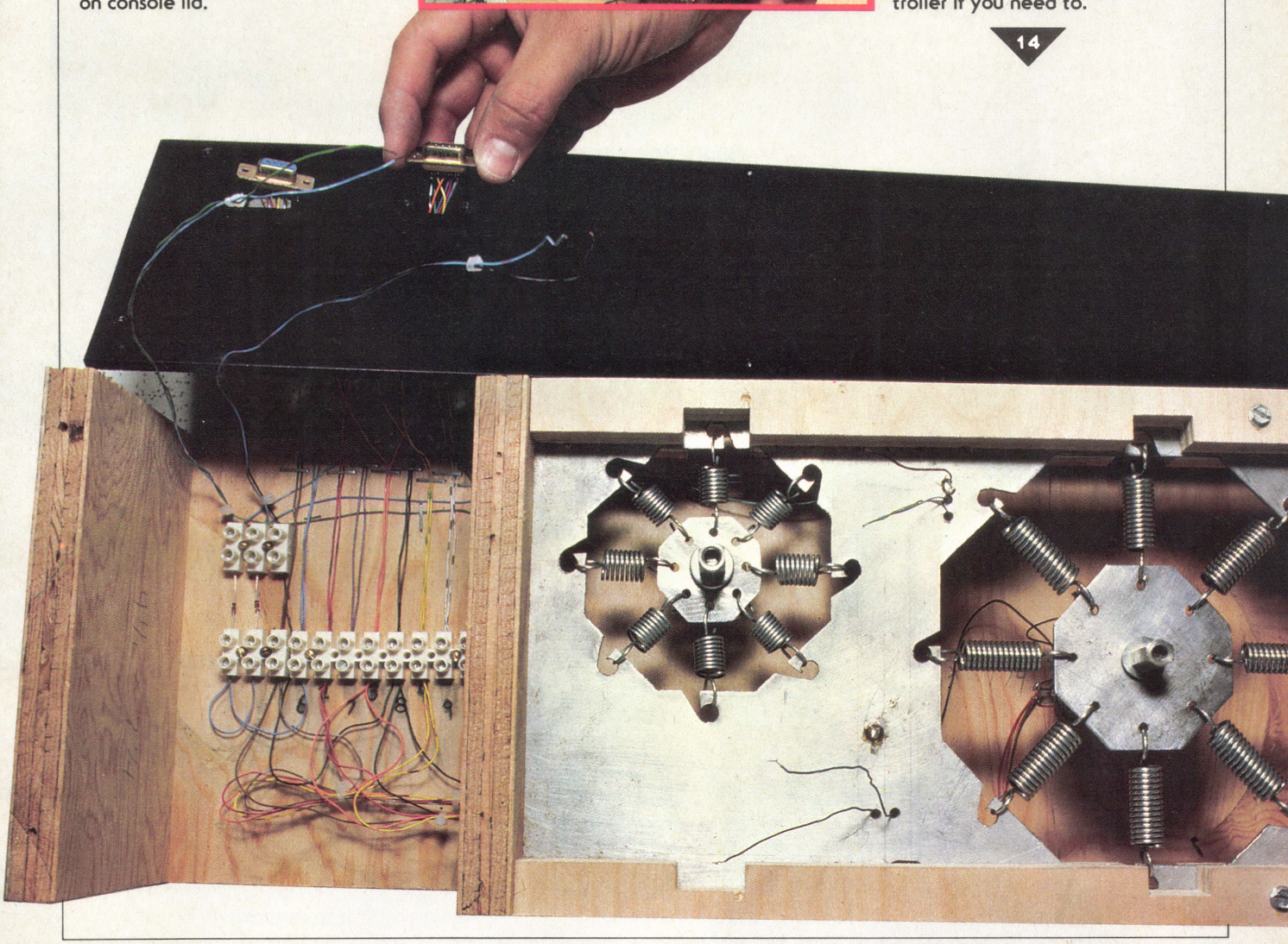
The open end of the spring hooks to the inside metal plate while the closed end snaps into the holes outside.





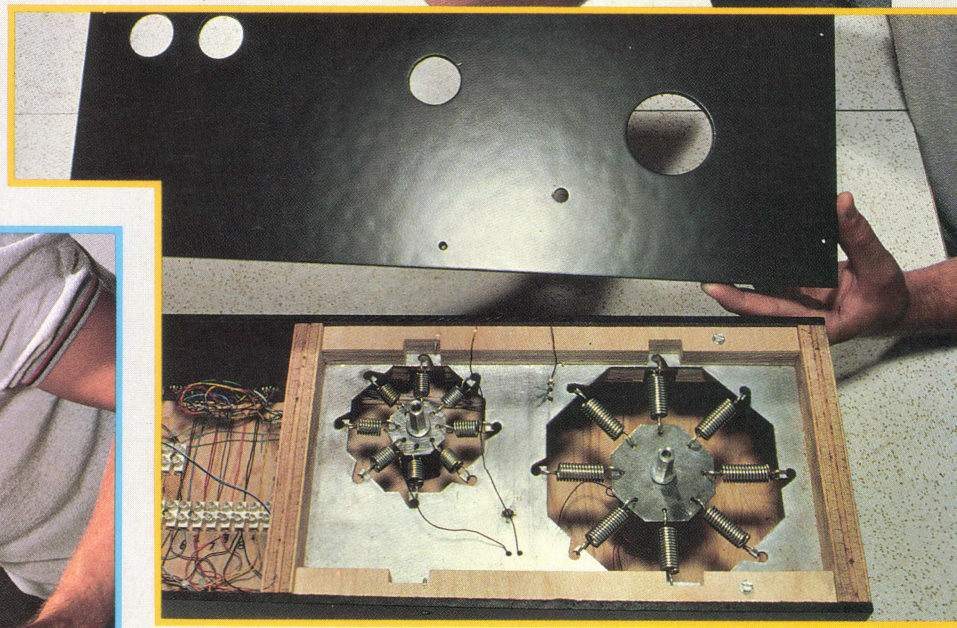
Both spring plates are now in place. Insert the 9-pin connector for the extension cord into back cover plate. The two connectors enable you to use a keypad controller if you need to.

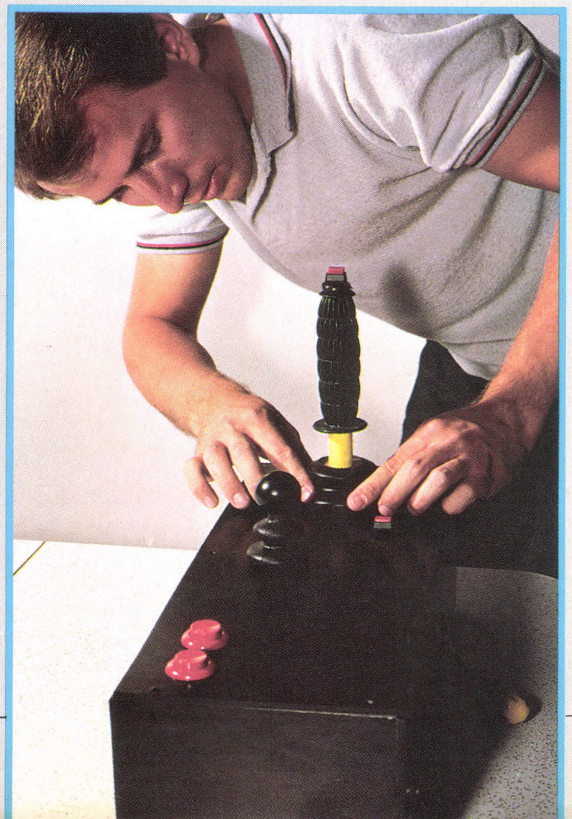
14



15

Rear view of almost-complete console. The 9-pin connectors are in place and the end plates (painted black plywood) should be screwed in.





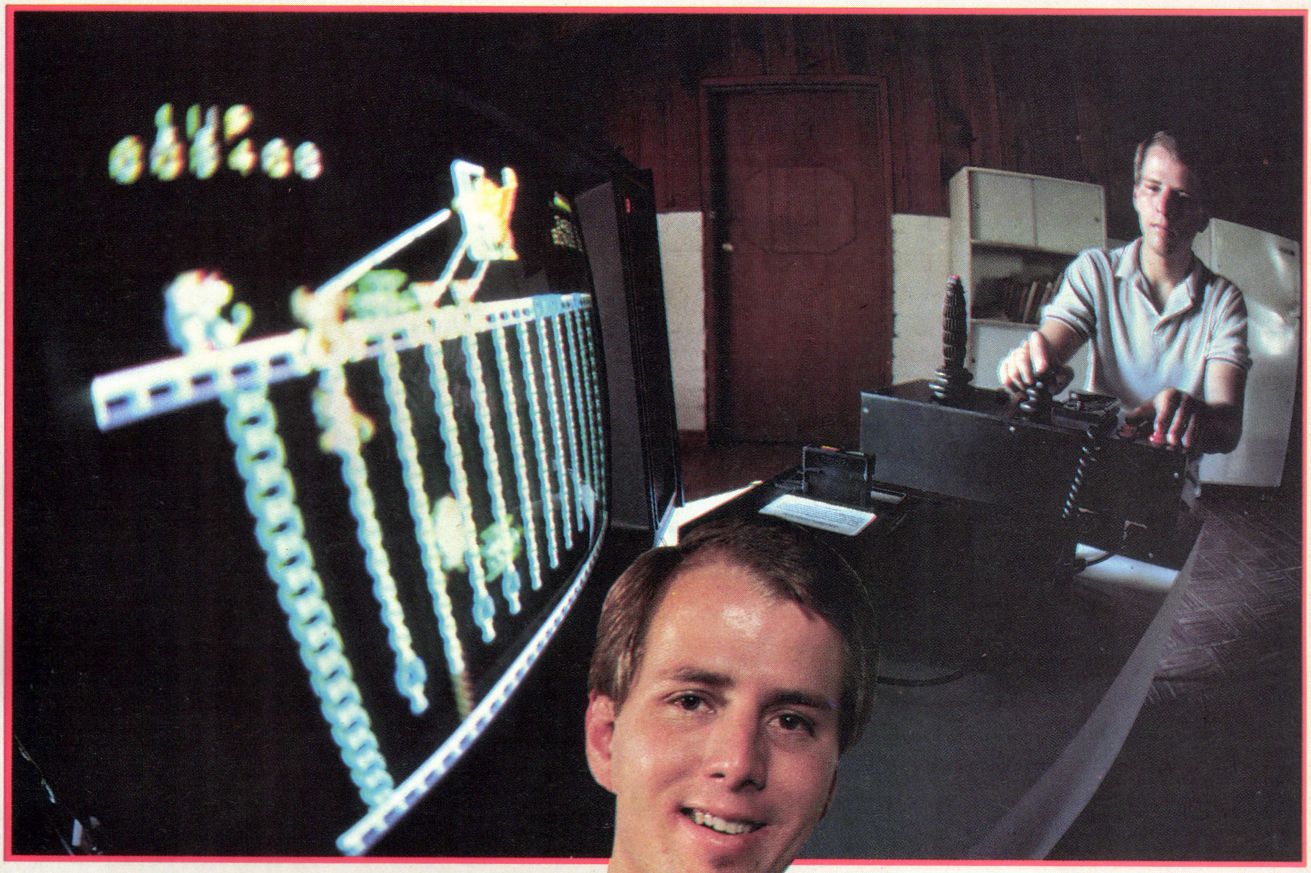
16

Take the larger boot, slip it down the pilot joystick and pop the top over the masonite ring.

Orient the lid properly before attaching it. Place the pilot

17

joystick into its spring plate and solder its lead. Before screwing it down, insert the main fire button and the soft feel push on/push off switch and then solder leads. Thread ballgrip into spring plate assembly.



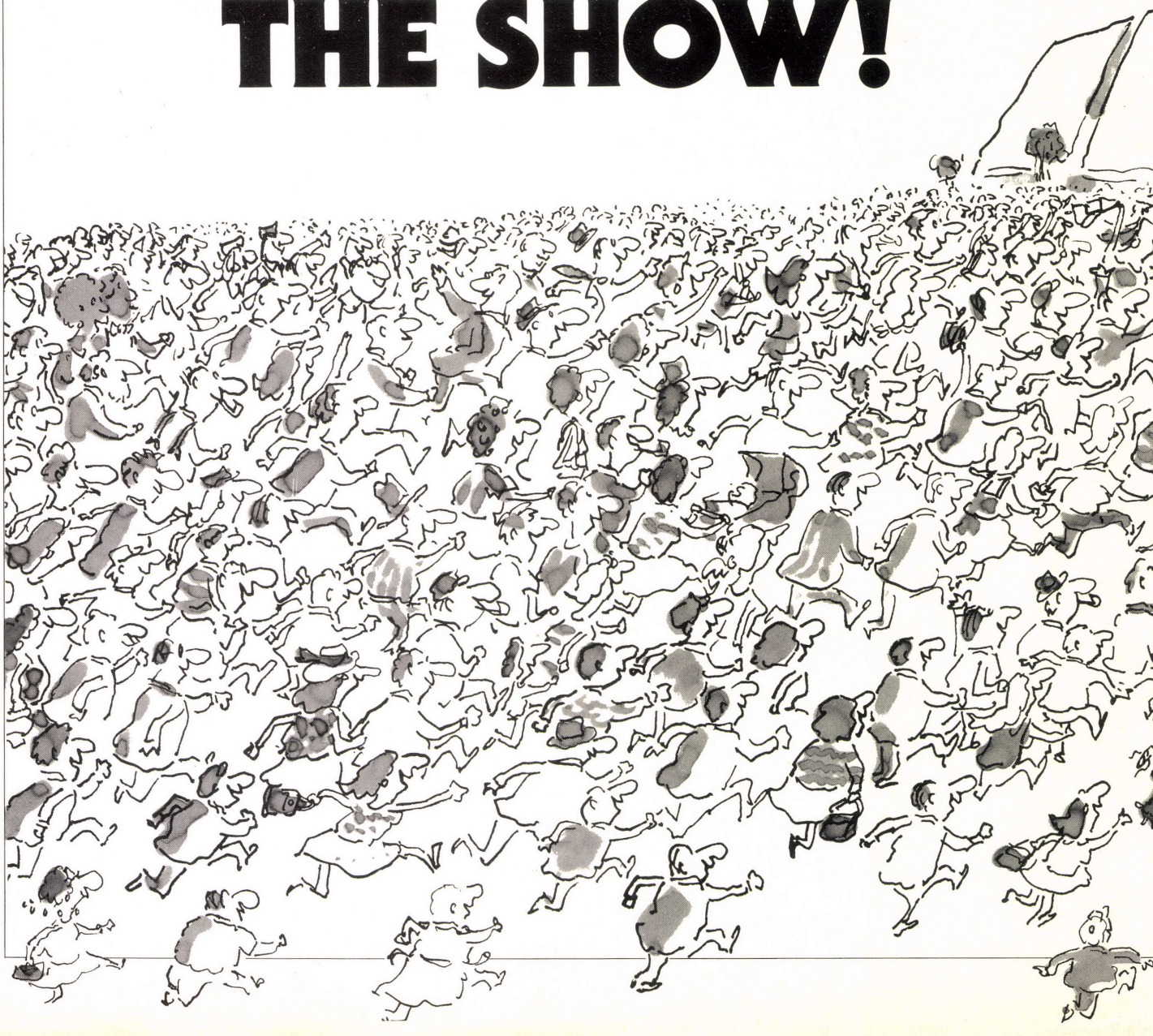
You can also build this console using one joystick. If you do, using a smaller ball-grip joystick is suggested as it is a better all-around joystick than other types.

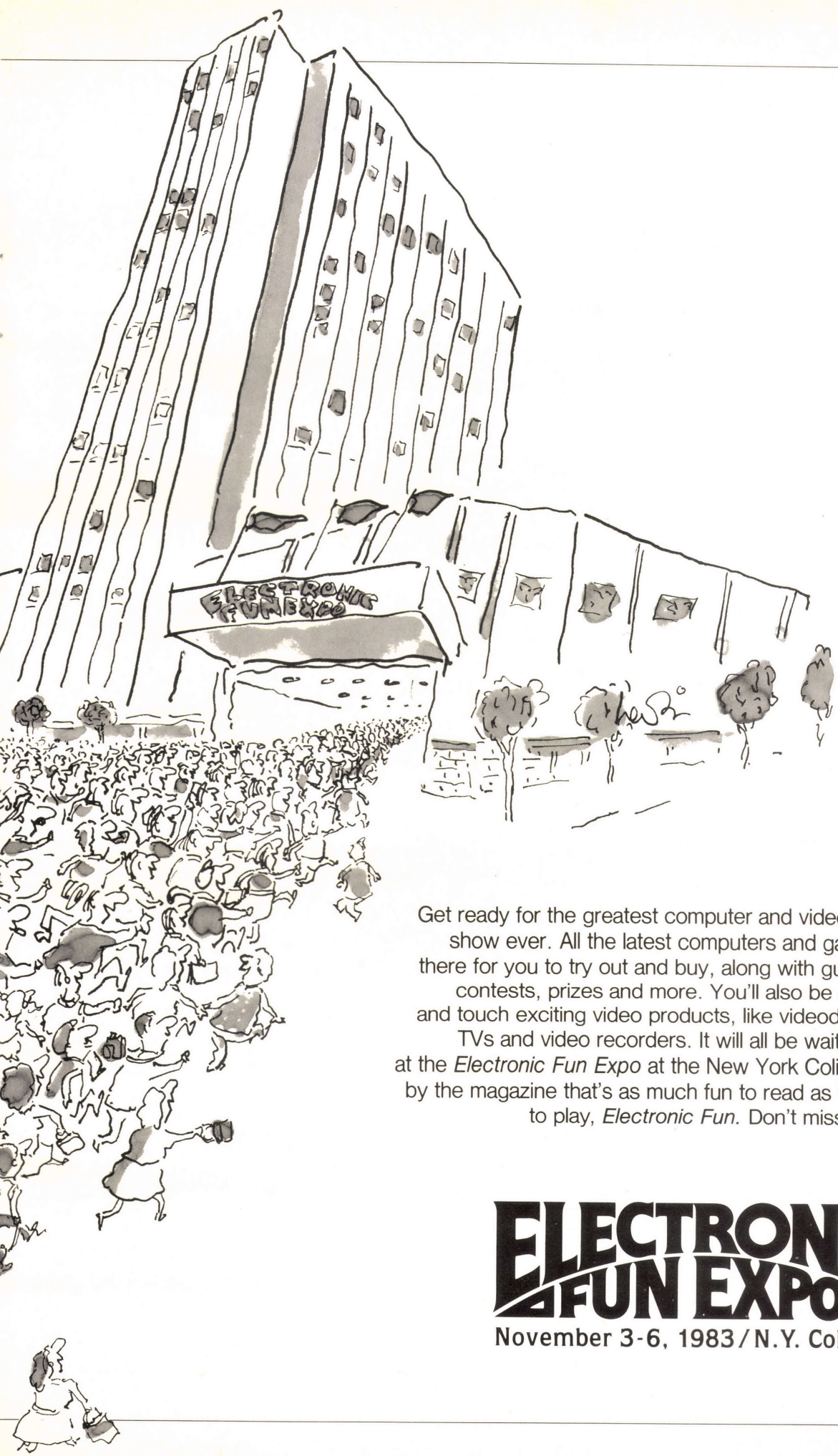
18

19

Now simply connect the extension cord from the console to the TV and voila! If you only own an Atari system, there's no need to connect two different fire buttons.

YOU'VE READ THE MAGAZINE, NOW SEE THE SHOW!





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ELECTRONIC FUN EXPO

November 3-6, 1983 / N.Y. Coliseum

Mission X marks the spot

MISSION X ★★★★

Mattel/Intellivision

By William Michael Brown

Scrolling games have always been a bit of a disappointment. Sure, they seem realistic at first: There you are, piloting a ship or tank around an apparently endless landscape that reveals some new kind of terrain at every turn—just like the real world. Except that it's just a *map* of the real world—a flat, 2-D map that is, finally, as simplistic and boring as a chessboard. Even when a game does try to reproduce a 3-D terrain feature, all you get is a picture of a mountain or forest and a sudden slowing of your vehicle when you try to cross the picture. That gives you the problems presented by real terrain—but not the *feel* of it.

That's why *Mission X* raises my hopes for the whole scrolling genre. While it shares the same flat map of other scrollers, its real terrain is the Wild Blue Yonder—a deep, 3-D airspace that you can actually swoop, climb, turn and dive in. And this ain't window dressing, folks—this 3-D illusion is so integral to game play that being able to feel your position in the sky—to, in effect, fly by the seat of your pants—is not only possible, but absolutely necessary for your survival.

The scenario is simple: You're the pilot of what looks like a P-38 fighter-bomber, flying high above a landscape liberally dotted with enemy tanks, trucks, roadways, trains (and their tracks), ships and gun emplacements. Your job: Bomb the living daylights out of everything you can, including several bridges that appear less often (extra points if you can nail both sections of each bridge). While working, you've also got to dodge flak launched from the ground batteries, and shoot down enemy fighter planes that suddenly appear in your sky at various times.

The variable-altitude feature means you can dodge your enemies by simply easing back on the stick, and dropping a few bombs before peeling off to the left or right. Or drop a few from very high altitude, wait for the flak gunners to get your range and, once they've fired, swoop down for a blistering low-altitude bombing run while the missiles explode uselessly high over your head.

At every change in altitude, your plane's speed and size changes—quick and small at low altitudes, large and slow way up there. Other features heighten the realism: camouflaged trucks are devilishly hard to spot (even harder during the dark night-bombing sequences); you get extra points for multiple hits on the same target; the tanks also fire at you from time to time; you even get points for bombing the road and train tracks. All in all, Mattel's translation of this sadly neglected Data East coin-op is a delight—right down to (at last!) *intelligent* strategy tips in the back of the directions booklet.

> Change altitude the instant you spot an enemy fighter—it's almost your only chance to survive such an encounter.

ROBOT TANK ★★★

Activision/Atari VCS

By Michael Blanchet

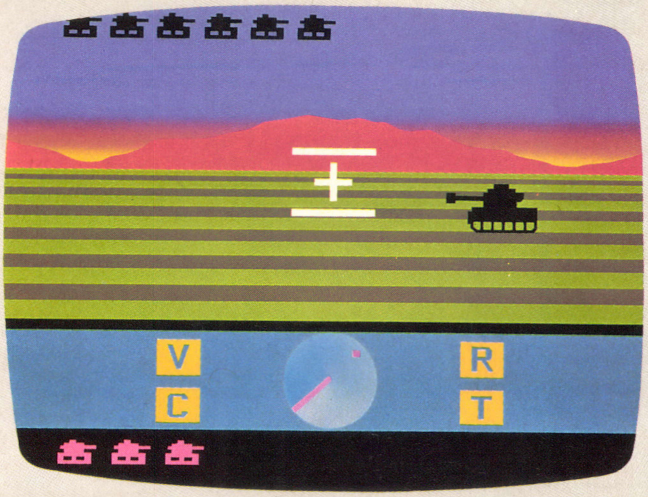
Most video games ask you to play the hero. *Robot Tank* on the other hand, asks you to stick your neck out for (of all places) Los Angeles. If I had any say in the matter I'd lay down and let the bad guys do the place in. Unfortunately, that's not the idea behind this rather slick first-person contest.

As with most shoot-em-ups, the *Robot Tank* scenario is highly unlikely. According to the storyline, a detachment of robot attack tanks have sprouted brains of their own and are no longer taking orders from Army Computer Central. Instead they roll through the Mojave Desert en route to LA. Controlling your own similar force of robot tanks, your job is to battle the errant machines in the blighted wasteland before they roll into the smog capital.

Robot Tank is similar to Al Miller's last effort, *Star Master*. Instead of manipulating a character on the screen, you shift your perspective of the playfield. The game is quite realistic. I also found it a bit frustrating at

times and a repetition of *StarMaster*'s play principles.

Each one of your robot tanks is equipped with radar, a forward cannon, the ability to move and a video feed. Like *StarMaster*, any one of these vital functions can be knocked out by an enemy shell that passes a little too close. Unlike *StarMaster* though, there are no repair



stations in the Mojave Desert. Lose your video, for example, and you must rely solely on your radar to locate and destroy the enemy tanks. Until the damaged tank is hit and replaced with a fresh vehicle you cannot regain a lost function.

Keeping yourself out of the line of enemy fire isn't your only concern. For some reason it snows and rains quite a bit in the Mojave Desert. Changing weather conditions will adversely affect your maneuverability. In addition to the inclement weather, it also gets dark. And let's not forget fog. After all, this is taking place near Los Angeles.

On the surface, *Robot Tank* sounds pretty straightforward—search and destroy. You'll find, though, that for every obvious strategy there is another subtle, almost hidden one that must be discovered and implemented. This is a good solid challenge for anyone looking for a different breed of shoot-em-up.

When night falls keep the enemy tanks behind yours. Here they cannot shoot at you.

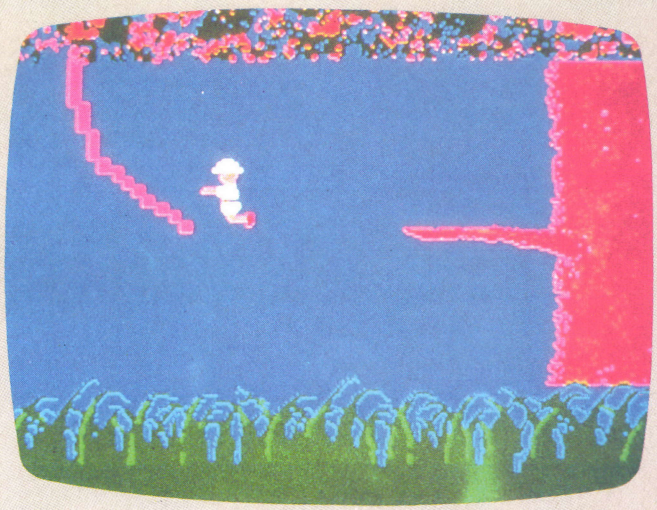
JUNGLE HUNT

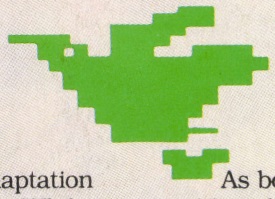
Atari/Atari 5200

By William Michael Brown

If at first you don't succeed, try again—harder. That seems to be Atari's motto these days, because their new translation of *Jungle Hunt* for the 5200 format is a big (if not truly vast) improvement over the lackluster VCS version. Not all that improvement can be chalked up to the extra program muscle in the 5200, either. Somebody seems to have worked extra hard to make this cart not only *look* but also *play* better than the 2600 version.

While neither one really duplicates the Taito coin-op, the 2600 *Jungle Hunt* was a real disappointment: a blocky Jungle screen with swinging vines that were ridiculously easy to catch; a River screen where the crocodiles were almost impossible to knife correctly; a much-too-easy Boulders screen; and a Headhunters sequence that just left out the girl altogether.





Along with better graphics, the 5200 adaptation brings back much of the coin-op challenge. While our pith-helmeted hero still makes incredible leaps, each of the vines he jumps for swings at a *very* different rate. At the Beginner level—there are also Regular and Advanced difficulty levels—the vine swings vary enough to challenge you even when you know the game pretty well. And in advanced play, you also have to contend with a monkey.

The River screen is a real prize: gorgeous blue water, a highly detailed river bottom, well animated crocodiles and bubbles, and much more exactitude in the croc-stabbing. The Boulder screen's rocks still have an odd way of bouncing without provocation, and this is still too easy to beat—except, once again, in the advanced level, where some of the rocks roll fast enough to overtake their earlier-starting cousins. And all three levels of the Headhunters sequence bring back the lady in distress, dangling from a rope above the stewpot while the *National Geographic* refugees do their dance.

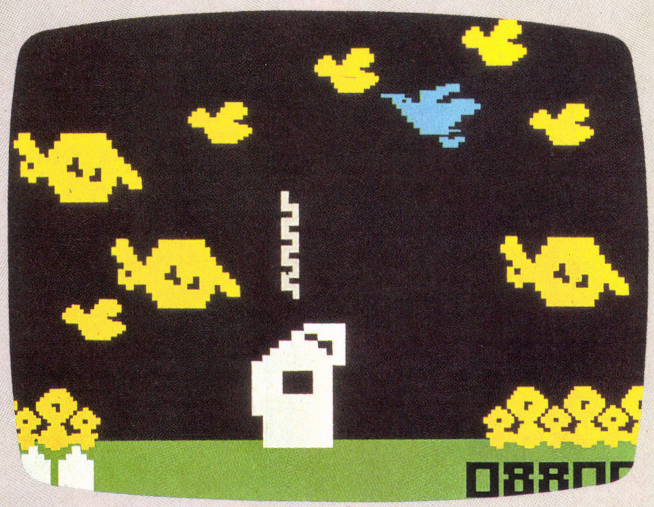
Having trouble with the crocodiles? Your knife has to be the very first thing they come in contact with.

BUZZ BOMBERS ♪♪♪

Mattel/Intellivision

By George Kopp

Here's a game about the birds and the bees that's fit for family consumption. Read the instructions, it sounds interesting. Load it up and get the title screen, it looks great. Play it, and you say, "I got stung!" Seldom has a game showed more promise and failed to live up to it time and again. Perhaps it was designed for small children, but the potential is there for a great game. Where is it?

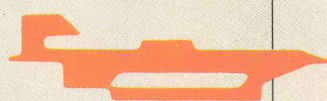


As bees descend from the top of the screen you try to blast them with a can of Raid-like goo which you can move back and forth along the bottom. Blast a bee and it turns into a honeycomb. Your friend, the hummingbird, takes a snack from the honeycombs and you get points. The more honeycombs you can keep on the screen, the more points you're likely to get, but you'll have to blast some away to get at the bees.

Unblasted bees, meanwhile, cause flowers to grow when they reach the bottom of the screen, restricting your left-right movement. In addition, killer bees appear, travelling at twice the speed of the ordinary bees. Despite their name, though, they don't kill you—nothing does. You do have a limited amount of spray, though, so aim carefully. If you accidentally spray your hummingbird too many times he gets sick, turns green and exits for awhile.

Buzz Bombers has all the makings of a crazy high-speed shoot-em-up like *Centipede*, but none of the action. If Mattel had added some difficulty levels it might be a different story, but there's only one. Even some flashing points on the screen would have added some incentive to the gameplay. Instead you just shoot the bees and have a look at your score when you finish a round. As you progress, the game gets a little harder but the screen stays the same. The graphics are good—the bees alternately fly and hover—and the "Flight of the Bumblebee" music is sufficiently nervewracking. The only thing they forgot was the game.

Look for doubled-up bees. You can get two with one spray and save your ammunition. Lack of spray is the only thing that does you in.



SUB SCAN ♪♪

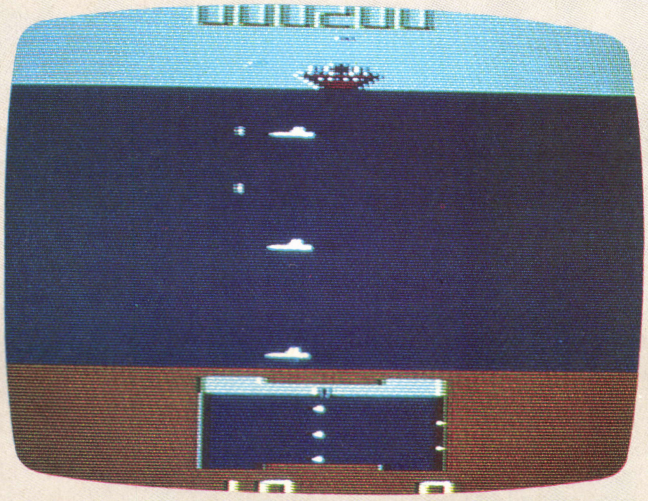
Sega/Atari VCS

By William Michael Brown

As any writer who's done it will tell you, translating great literature from one language into another is a tough job. You can spend years at it, trying to get every word and nuance just right—and still end up with something that just misses the point of the original.

That seems to be the problem with Sega's *Sub Scan*. So far, the master coin-op producer has translated two of its arcade hits into home carts. One—*Tac Scan*—is a pretty good game; it looks very little like the coin-op version, but plays very well. *Sub Scan*, however, has had the heart cut out of it.

It's not that home *Sub Scan* differs that much from arcade *Sub Scan*; in fact, they resemble each other pretty closely. Both have the same object: dropping depth charges on fleets of enemy submarines as they glide beneath your battleship at several different depths.



Both have radar screens that pick up subs outside the battle area, allowing you to anticipate their arrival. Both have bonus subs that cruise past along the bottom, are very hard to hit and are worth more points the longer you wait before nailing them. And both share the same main challenge: making judicious use of a limited supply of depth charges that drop very slowly through the water. You only get four at a time, and the ones you've fired have to explode before your supply is refilled—a feature that puts a high premium on making every one of them a hit.

The cart's screen is as nice as the coin-op, and the sound effects are adequate. So what's wrong? Simple: In the coin-op, the subs fired torpedoes back at you. In the cart, they don't.

It's a small change that ends up taking all the excitement and danger out of what was always a fairly slow-moving game. With torpedoes, the coin-op had a nice mix of perceptual problems: You had to wait, patient and calm, for the subs to get in the right position before firing your depth charges—while simultaneously holding yourself ready for a panic scramble out of the way of the torps. If you were any good at this switch, you could go on forever—some subs might get past you, but as long as you weren't torpedoed you could go on bombing the others and racking up points.

Home *Sub Scan* presents you with just the one challenge—and a limit of ten subs. Once they all get safely across the screen, your ship simply blows up and that's all, folks.

Why did they get rid of the torpedoes? Heaven knows; it doesn't seem to be the result of any inherent limitation of the VCS. Whatever the reason, and whether you know the coin-op version or not, you'll probably find *Sub Scan* as challenging—and as pointless—as catching fish by dropping rocks on them.

Learn the proper time to drop charges by dropping walls of them at first. Then abandon this strategy—pinpoint accuracy is the only way to win.

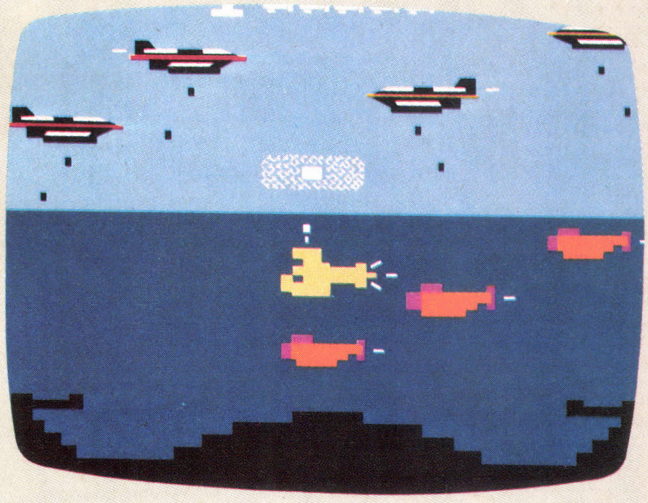
POLARIS

Tigervision/Atari VCS

By Phil Wiswell and Bernie DeKoven

Polaris was never a smash hit as a coin-op, and though this new VCS cartridge has its bright spots, we doubt it will fare much better. As controller of a submarine, you alternately face two screens: a shoot-em-up with other subs and planes, and a test of navigation. But because *Polaris* lacks cohesion between the two screens, each of which is interesting by itself, you end up feeling like you're playing two different games.

In the first screen you face one enemy submarine and three planes overhead that keep dropping bombs, but they fall too slowly to make this scene much of a challenge. Enemy subs do nothing but get in the way and are easily sunk from beneath—and make sure you do that before shooting the last of the planes. When that happens, a dive bomber appears and you need all the maneuvering room you can find. You don't want to worry about the enemy sub now, because the dive bomber doesn't fly in as predictable a pattern as the other planes, and its bombs are heat seekers. This was our favorite scene, and it proved very challenging to learn a technique for dealing with this small enemy. Somehow you must let the bomb get on your level,



dodge it, then surface for a quick shot at the bomber before it turns and dives again.

As soon as you hit the dive bomber, the navigation screen appears. It's sort of like playing *River Raid* without many enemies—you just have to stay in the blue water. The channel maze you must navigate is easily learned, however, and becomes tedious after several plays, especially the first navigation screen. It's only for practice and contains no enemy mines to shoot. The mines, which you find in all succeeding channels, are just X shapes that dance back and forth.

When you hit one, the whole line of three disappears. The submarine makes a beautiful sonar-ping noise throughout this scene, but it is only used for effect when it could have been part of the gameplay. Think about it: As the maze scrolls your way you could navigate by sonar. No noise would mean a clear passage. Games could really be wonderful.

Everyone starts off on the same foot in this game, or at the same skill level anyway, because there is only one. This can be frustrating to the better player who would rather enter the game "in progress." In short, *Polaris* is challenging, particularly as the speed and number of enemies increase, but, in this case the whole is less than the sum of its parts.

In the first scene make sure to shoot all subs before the last plane. In the second scene, use speed and brakes to get the targets to line themselves up.

WHITE WATER ♪♪♪

Imagic/Intellivision

By Michael Blanchet

When I first heard "White Water", my mind immediately raced to a scenario out of the movie *Deliverance*—four men crashing through the foamy drink, armed with bow and arrows and ready to waste anybody who threatened them. The white water we're concerned with is something like this, without as much urgency or excitement and without Burt Reynolds.

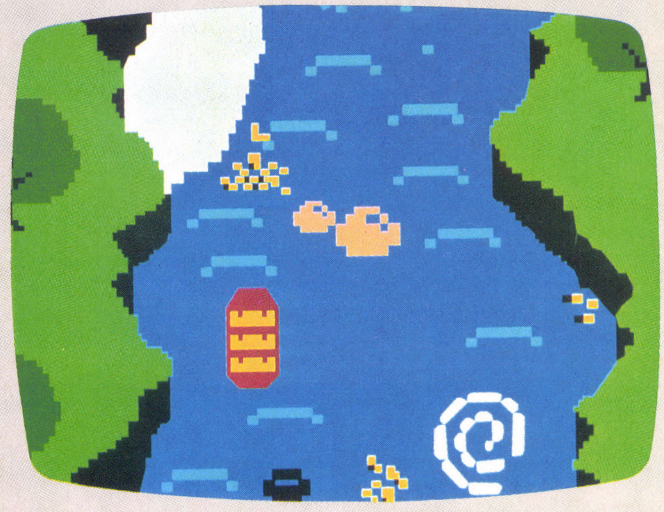
I've only gone rafting once or twice, but I do know what makes the sport fun and exciting. It's that "down in the trenches" feeling—the water in your face and the combat between you and the elements. Since you steer the raft in *White Water* from way overhead (imagine yourself in a helicopter looking down on the river), most of the thrill of being there is lost. It's a little like taking a shower while wearing a raincoat.

According to the directions, you are the leader of an expedition into "the largely unexplored reaches of the Amazon River." Along the way there's a bit of sightseeing to do. Just beyond each beach you'll encounter a forest—the home of an ancient tribe that has decided to let you participate in "their most ancient tribal game: the Flag Race (Tykutoomwa in their language)." When you reach the clearing you'll notice a bunch of flags, a golden urn and two other figures (the chief and one of his henchmen). The idea here is a lot like a game I played when I was a kid. You can grab up to two objects during each turn (the henchmen is the other contestant). If you capture the urn, all's fine and dandy. Go back to the raft and head to the next port.

Steering the raft is much more difficult than the flag race. In still water the boat responds fine. Most of the game, though, you're at the mercy of currents that slam your little dinghy into the rocks. Navigating the tough spots is the heart of this game, yet you're barely given a fighting chance to make it alive.

Graphically, *White Water* is another Imagic masterpiece. The images are sharp and colorful, and the river itself looks real enough to swim in. But no amount of artfulness can save this game. Instead of recreating an experience most of us rarely get a chance to try, it separates us from it.

You want to make sure that the urn is the last piece remaining when it's your turn to pick.



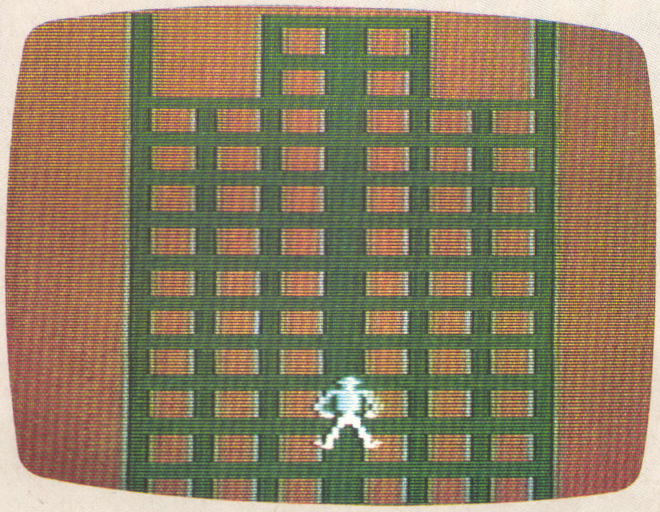
CRAZY CLIMBER ♪♪♪

Atari/Atari VCS

By Mark Trost

Webster says games are synonymous with fun. Webster never played the Atari VCS incarnation of *Crazy Climber*. The endearing qualities which contributed to the playability of the arcade title are wholly absent here. The comedic looking climber, the handsome high-resolution graphics and the pitiful "Oh, Noooooooooo," as the Climber falls from his perch, are all missing from this 2600 cartridge.

Here the Climber is reduced to a limber-limbed stick figure with a triangular hat (he didn't even have a hat in the arcade version). The unique dual-joystick controls of the coin-op (which Atari could have incorporated into the game) are duplicated via an incredibly repetitive series of up and down joystick movements. Obstacles are equally mundane and graphically uninspiring. Both the bird with its bomb of dubious origin and the mad flower-pot-dropping doctor are in attendance, but every



time he attempts to knock the Climber down with a pot, basket of fruit or bucket of water, all the animated objects on the screen begin to flash like the ghosts in the VCS version of *Pac-Man*. So much for technical progress.

Even the basic scenario is yawn inducing. The game grants players five Climbers with which to scale four skyscrapers. Climbers can only move up when the windows are open (represented by a black center in the middle of a blue, red or green frame). Every floor scaled earns between 100 and 400 points. Each round begins with 100,000 to 400,000 potential bonus points to be earned when the skyscraper is climbed and you're carried off by helicopter. The bonus is reduced by 100 points for every 10 seconds of elapsed playing time. Another 100 bonus points are subtracted every time you fail to avoid an obstacle. The same falling debris will also knock a Climber off the building unless his arms are firmly gripping an open ledge. And another 100 points are lost each time you receive an electric shock from a passing neon sign or are hit by a girder (which will always knock you to the ground no matter how firm your grip). Asking players to avoid rather than overcome obstacles stands out as the major flaw in this flawed game, as it was with the arcade version. Parker Brothers steered clear of this problem in their *Crazy Climber* derivative—*Spider-Man*, by allowing players to save themselves with web fluid. But without these redeeming features and lacking the color graphics, voice synthesis and carnival-like feeling of the *Crazy Climber* coin-op, Atari seems to be the craziest of all for bringing out such an unentertaining offering.

Play a waiting game. When obstacles come in your path, or a window is about to close, just wait it out. The window will soon open and the obstacles will bounce off your head.

REACTOR ★★★

Parker Brothers/Atari VCS

By Noel Steere

Ever since Parker Brothers started to make cartridges, it's stuck to licensing arcade titles. Will they every stop? Probably not, but if they keep on making games like *Reactor* with superb graphics and a lot of challenge, it doesn't matter.

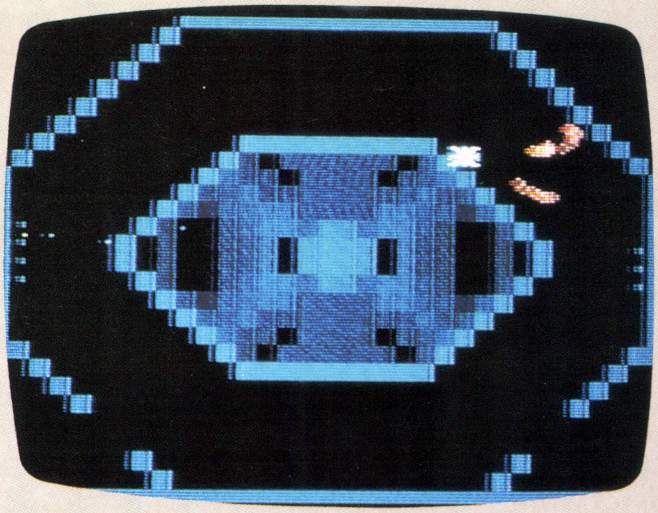
Reactor is an adaptation of the arcade game by Gottlieb. The object is to use your ship to bounce nuclear particles against the outer walls of a nuclear reactor in order to destroy them. Unfortunately, they can do the same to you. This is not the only danger. There is a core in the middle which approaches melt-down faster than Three Mile Island. There are two ways to shrink the core and prevent a melt-down: (1) destroy all the particles in one round or (2) make the particles hit all the rods at one side.

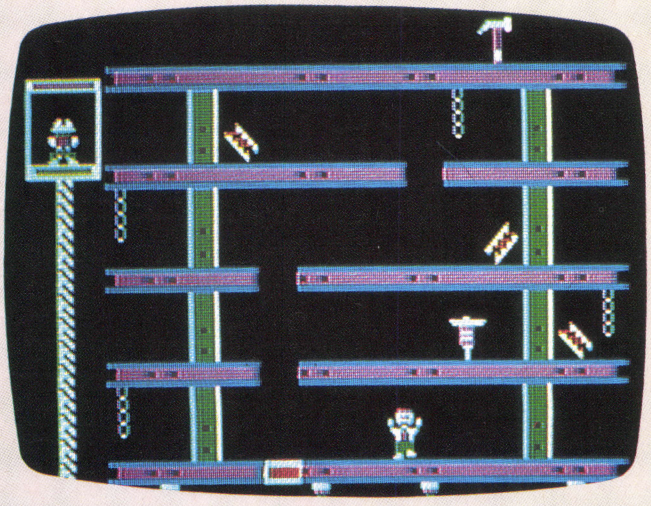
During the first eight rounds you can relax a little and allow yourself to touch the sides of the reactor, but in the next eight rounds you can't even get close to the reactor or you will be sucked in and destroyed.

Pressing the fire button activates a decoy which throws all the nuclear particles off the track. This can be useful when you want to kill a lot of particles at once. The decoy, you see, can't be destroyed but its lifespan is only 10 seconds.

As far as graphics go, the particles and your ship look fine. The wall and the reactor, however, look like something from out of the old days of *Pong*. The graphics could be brushed up somewhat.

Try to hit both sets of rods to gain extra decoys on the first eight rounds, then use them when you reach the levels where the reactor can kill you.





HARD HAT MACK ♪♪♪♪

Electronic Arts/Apple

By Michael Blanchet

Hard Hat Mack carries a heavy burden on its shoulders. Since it follows in the footsteps of *Donkey Kong*—the game generally perceived as the first obstacle course/ladder contest—one could say that at a glance *Mack* is a copy—a game that borrows play principles from another game. At first I felt the same way. Upon closer inspection, though, *Hard Hat Mack* proved to be a welcome variation on the all too familiar "scale the structure" theme.

Instead of emulating, *Mack* has used *Kong* as inspiration in much the same spirit a movie is drawn up from a book. The director has his ideas, the producer adds a few of his own and presto—we have a brand new story with a few familiar threads running through it.

Instead of wasting his time chasing girls, *Hard Hat Mack* is out to complete construction of a building. In the opening scene the player must pick up four girders and place them in the openings in each one of the structure's four floors. Once this is done he must rivet them in place. Occupational hazards include vandals, OSHA inspectors, flying chunks of metal, and, of course, falling to the ground. Unlike most video games where play gets more difficult as the game progresses, *Mack* starts out tough and gets tougher. Round one is by no means easy. I spent an entire afternoon in front of this game before I managed to move on to the next screen.

All totaled there are three different screens each of which requires you to perform a different job. In round two the object is to pick up all of your tool boxes. Once this is done you must properly time your ascent to the top floor so that the large magnet will pick you up. In the final sequence you must drop all the steel blocks lying about through the holes in the framework into the rivet machine resting on the bottom of the screen. As I have described them, the objectives in *Hard Hat Mack* may sound simple, even childish. With words I can do this game no justice. *Hard Hat Mack* gives new meaning to the words "run and jump" as they apply to video games.

Unlike its cousin, *Donkey Kong*, where the player was asked simply to reach the top of each structure, *Mack* forces you to pretty much cover the entire playfield in the line of duty. You can start at the top, the middle or the bottom. Regardless of where you choose to begin, you must complete the specified task on every floor before moving on.

In *Donkey Kong*, the ape and his barrels were your only worry. Here you must not only look up to see what's coming down, but also down to see what's coming up, and sideways to avoid whatever is coming right at you. Each and every screen of *Hard Hat Mack* is bubbling over with activity, so much so that you almost have to look everywhere at once. Action as busy as this demands and gets your complete attention.

Although the object of the game appears clear cut, there are many different ways you can go about tackling the task at hand. You'll find yourself experimenting with different jumps and patterns. Like any good puzzle, a solution always exists but it is not readily evident.

Graphically, *Hard Hat Mack* stacks up with the best. Even on the Apple monitor the phosphor green images look clear and sharp.

If I had to voice one complaint it would be the fact that you must start over from square one whenever your Mack falls or is otherwise eliminated. In round one, for example, each unriveted girder pops back out when a game life is lost. But alas, being close only counts in horseshoes and hand grenades.

Avoid the Riveter until all the girders are in place. Once you grab it you can't let go.

SCORPION ♪♪♪♪

Tronix/VIC-20

By Robert Alonso

Scorpion is a fast and furious frenzy of excitement. It is survival of the fittest taken to a nightmarish video extreme. As the Scorpion, you must hunt as well as avoid being hunted. There are eggs to hunt and eat, frogs to zap and bring home to feast on, venus flytraps to shoot out of your way, dragons, worms, stalkers, deadly pod mothers and even more deadly pod babies. You must eliminate as many as you can to insure your survival. But beware, because the more predators you destroy, the more numerous and deadly they become in the next of the 32 levels. One more danger menaces your existence—a forever dwindling supply of oxygen.

You have a bird's-eye view of a portion of a complicated maze and various status meters that tell you your score, the oxygen remaining, when your next bonus will be and a precise scan of the entire maze. As you move about the maze, the bird's-eye view also moves, thereby allowing you to see clearly any portion of the maze.

You proceed from one level to the other by eating all the available frogs. You must be careful not to get eaten because you only have five lives. More lives can be acquired by reaching the bonus level, but that's easier said than done. Bonus levels and difficulty levels can be set before beginning the game.

Scorpion is very well made and the graphics are a pleasure to see. Its most outstanding feature is its speed. It truly qualifies to be called an arcade-like action game. Other impressive features are the ability to pause in the middle of a game and a special mode that enables left-handed use of the joystick. The sound effects are often menacing, and when you fire the shots sound like the laser fire in big-budget space films.

Perhaps the only thing that detracts from *Scorpion* is that the cute little creature that arcaders have learned to love in *Frogger* is made the villain. *Scorpion* is a bit twisted in its representation of the animal world. After all, everyone knows that scorpions are venomous and evil while frogs are helpless little creatures. And then again, even the most evil and villainous creatures have to survive too, don't they? Another twisted representation is that worms are deadly to the scorpion. Although very far from reality, your imagination must be ready to compensate for this.

Small discrepancies put aside, *Scorpion* is truly a Darwinian delight.

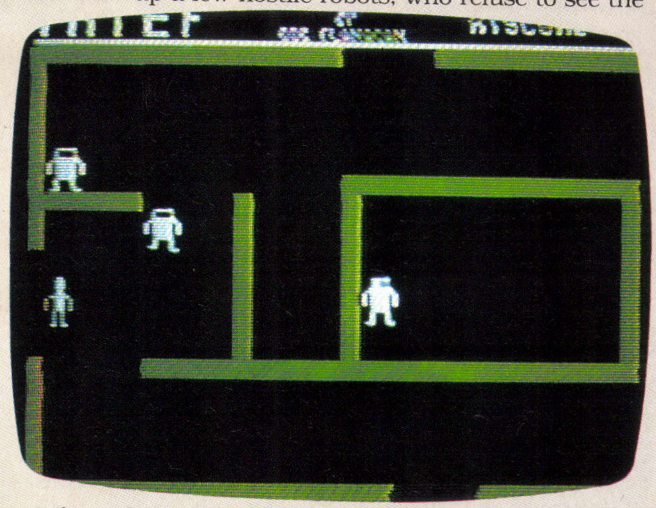
To obtain high scores, leave the venus flytraps alone and try to get the unhatched frog eggs. They are worth it.

THIEF ★★★★

Datamost/Apple

By Paul Backer

If you're tired of games that require you to read a book of instructions that make the scroll of Truth pale; if you are looking for a game where you can just go out and blow up a few hostile robots, who refuse to see the



wisdom of letting you be the Big Cheese around the maze, then *Thief* is for you.

Basically *Thief* plays just like *Berzerk*, mainly because it *is Berzerk*, reborn through the miracle of modern programming. This clone is more than welcome because it seems to be the only version of *Berzerk* available for the Apple. The object of the game is to run around an endless supply of very simple mazes and blow away as many robots as you can.

The game plays well. Though the graphics and the sound effects are nothing to rave about, they faithfully recreate the original. The animation is smooth, and the deadly walls and doors that don't allow you to go back into the room via the same door that you left it are there, too.

But there are some problems—the biggest one is making your man fire. Unlike most other *Berzerk* adaptations you don't get to fire in the direction in which you are running. You have to stop, aim and then shoot.

This game provides a welcome diversion from games as complicated as *Wizardry* or *Ultima II*. *Thief* is the best *Berzerk*-type game you can buy for the Apple.

The blob seems to go out of his way to destroy the robots before he gets to you. All you have to do is sit back and relax at the nearest exit, and let him take care of the robots for you.

STICKYBEAR BOP111

Xerox Educational Systems/Apple

By Randi Hacker

Our lives don't suffer from a lack of cute bears; Pooh, Paddington, Yogi, Smokey and Teddy, to name just a few. And now there's Stickybear who has as much personality, good looks and class as any of his forebears. Add to this the fact that he's as natty a dresser as any turn of the century millionaire and

you've got the start of a very charming children's game from Xerox.

The object is to shoot at various objects that float casually across a total of six screens. All of the scenes take place between the pillars of what appears to be either The Palace or some other uptown vaudeville theater. Your weapon is a teeter-totter. A ball shoots out of the left side, lands on the lower end of the teeter-totter and then you catapult it upwards in order to bop either Mr. Stickybear himself, ducks, hats or planets. The closer to the top of the screen the object you hit is, the more points it's worth. In subsequent screens you've got to avoid and bop sandbags (dropped by Mr. Stickybear from his own personal and very colorful hot air balloon), Mrs. Stickybear and her amazing floating rabbits and, last, a number of kleptomaniac birds who want to steal the ammunition you've got left.

You start out with 10 balls. They're stored in a small container in the right hand pillar of the theater. Each time you miss an object, you lose one. What's left in round six is fair game for the birds. After you've successfully completed all six screens, you start all over again at a much faster pace.

The graphics are outstanding. Stickybear is a well-fed, pleasingly plump gentleman with exceedingly good manners—as he floats by above you, he tips his hat. This is not a bear that holds grudges. He'll tip his hat even if you destroy him with your ball. If you should suffer the misfortune of being hit by some of Mr. Stickybear's ballast, your catapult is squished and the word "splat" appears followed by "The End."

Although this is aimed primarily at younger bear hunters, adults will find that some of the screens are challenging enough to hold their interest, too. And, if you don't want to play, you simply sit back and watch because the game is un-bear-ably beautiful to look at.

As easy a mark as Mr. Stickybear is in the first screen, don't waste time shooting at him. Aim at the planets floating along the top of the screen.

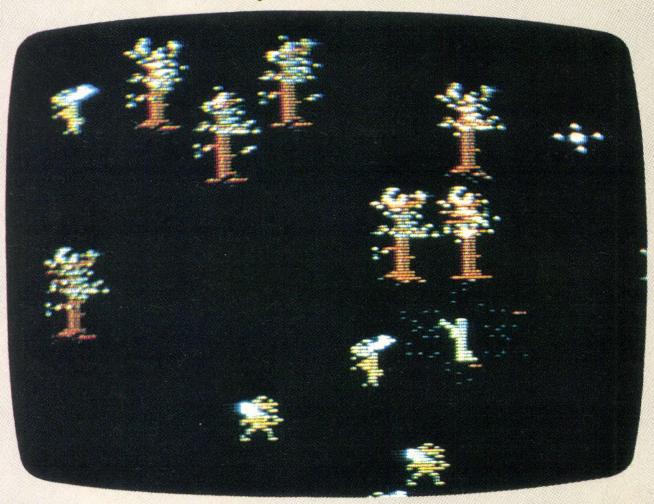
NECROMANCER1111

Synapse/Atari 400/800/1200

By Randi Hacker

People who are fond of black magic but squeamish when it comes to the ingredients (eye of newt, tongue of lizard, wing of bat, etc.) will be ecstatic over *Necromancer*. This enchantingly original game allows you to weave perfectly respectable spells without having to deal with anything really repulsive.

You're a sorcerer doing battle against some rather voracious spiders. Your weapons—and the spiders' favorite thing to poison—are the trees. Only these are enchanted trees which you control with your magical wisp. Using the wisp you plant the seeds, nurse the saplings to maturity and prevent them from being trampled on by uncouth Neanderthal thugs wearing nothing but large wooden clubs. Later, you take your deciduous army to the next screen where you position them strategically over unhatched spider eggs located in brick incubators. If you're skillful, the roots will erode



the brick and the tree will crash down, crushing the egg and killing the fledgling spider inside. If you're sluggish, the spider hatches, eats the tree and comes after you. Leave no eggs uncrushed because they all become spiders which come back to haunt and hunt you in the last screen—the final showdown between you and the Necromancer himself who, unable to find an apartment, has moved in to the cemetery.

Your wisp has more uses than a Cuisinart and is joystick controlled. In the first screen you throw it away from you and, by pressing the fire button, plant your seeds. In subsequent screens, you throw the wisp to magically move your trees to the positions you want them in. The wisp is also useful for destroying spiders and thugs. The only things the wisp cannot do for you are replenish your strength and create ladders. Strength is provided by walking into a small circular object that appears on the screen from time to time. Ladders for climbing lower and lower in the egg hatchery are procured by walking into question marks left by mysterious arms that descend from above. The arms can also spirit both you and your trees away if you happen to be under one of them when it takes a notion to come on down.

All of this action is accompanied by wonderful jazz music—almost as if Dave Brubeck and his band were inside the eggs instead of spiders. The graphics are magical—your wizard has a long-sleeve garment on and thrusts his arm forward authoritatively and the wisp and trees sparkle enchantedly. You walk away from the game feeling as if you could actually point to a broom and make it sweep. You can't.

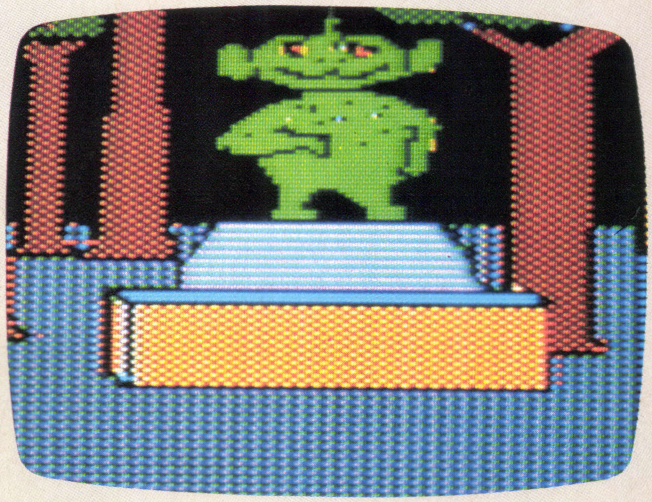
In the first screen, plant a tree in each corner first and the row of trees you plant between them will be protected. The Neanderthal bullies turn right around and retreat from trees that are bigger than they are.

BLADE OF BLACK-POOLE ♪♪♪♪

Sirius/Atari 800/1200

By Randi Hacker

The characters in this text adventure game are very demanding and remarkably helpless. They all want something and it's as if you are there solely to serve them. You're the one elected to locate and schlep back the things they need. And it isn't as if you can simply drive to your local 7-11 and pick up something as simple as a Super Slurpee or a frozen enchilada. These guys want things that not even Harrod's carries— the Jewel of Selmarn and the magical sword called Myraglym



to name just two of the many treasures.

The game is *The Blade of Blackpoole* and you are an intrepid adventurer who finds yourself transported back to the days of King Arthur. By entering a series of commands, you explore the unfamiliar terrain and try to locate the magical sword which, it is said, lies in a secret chamber somewhere in the country.

Aside from the usual commands such as "East," "West" and so on, you are also able to carry on conversations with several of the characters in the scenario: The carnivorous plant which bars your passage asks for something he gets in the spring. You first have to solve this riddle (hint: Spring refers to the season, not a babbling brook), then locate the object and carry it laboriously back to him; A recluse who hides behind a tree demands the Jewel of Selmarn before he'll give you any clues to Myraglym's whereabouts, and in the tavern you can ask the bartender and merry-making gentlemen questions, but their answers are terribly unenlightening. You can also purchase beer and other necessities for travel in the wilderness.

Several paths lead only to dead ends and others are tricky. While there seems to be no way out, there is. Take, for example, the quicksand pits. After a lot of experimentation with command verbs (jump, walk, fly, etc.) we discovered that you can get through the quicksand and emerge unharmed at the other side. How? We'll leave that up to you. This opened up many new acres to exploration and, in fact, led us to that which the carnivorous plant had such a yearning for.

In all, the game has a remarkably broad vocabulary and understands a good deal more than many other adventure games we've played. In addition, the graphics are beautiful and really give you the feeling of having travelled back in time to the days of old when you were bold.

As you can only carry a certain number of objects at any one time, be judicious in what you pick up. Not everything that looks as if it will be useful turns out to be needed.

Never drink the white potion. No matter how thirsty you are, resist the temptation.

BOULDERS AND BOMBS II

CBS Software/Atari 400/800

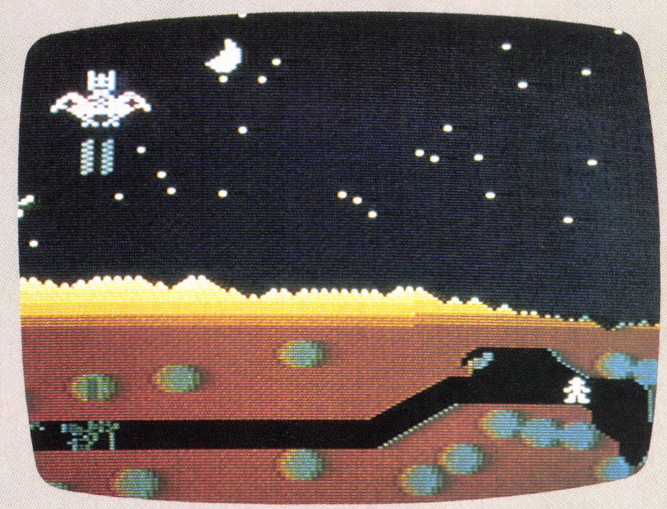
By Paul Backer

Boulders and Bombs is a digging game in which you must get three men across the screen, through tunnels that you make either by using your auger or bombs. You can alternate between the auger (a fancy word for an automated shovel) and the spelunker by pressing the joystick button. Your digging may be hampered by rocks—the higher the level, the greater the number of rocks that you have on the screen. In an emergency, you can plant a bomb by twisting your joystick clockwise in a circle.

Meanwhile, the sky above is infested with a hostile flock of birds—a mother and her three offspring. This is where the multi-player capabilities come in. Up to three other people can control the baby birds, which drop either nuclear rods or rods that turn into fungus when they reach the tunnel. The birds can drop rods through any terrain, though they are greatly slowed down by rocks.

This is a sound premise upon which to build a game. Unfortunately the designers failed to provide an exciting challenge. After the novelty wears off you notice the details, like the spelunker's complete ineptness at dropping bombs. After swinging the joystick around, I finally managed to plant one. I keep practicing, but unfortunately this didn't result in greater proficiency in bomb planting, only in the swift and unfortunate demise of my favorite joystick. And while the screen graphics *are* very beautiful, they never really change that much—just new boulders in the same old places.

If you are playing one of the birds, just plant a fungus in front of the spelunker, and after that he is finished.



CROSSFIRE III

Sierra On-Line/Atari 400/800/1200

By Walter Salm

Every time I think I've seen just about all that can be created in the way of innovative shoot-em-up games, somebody comes out with still another one with a different kind of twist. *Crossfire* is one of these, and it offers the best of several worlds: quick reaction time, maze-type movement, gaming strategy, shoot-and-duck, street matrix layout and bonus creatures ready to be gobbled.

Graphically, the game isn't all that great, but the gameplay is so good that it more than makes up for this shortcoming. You're given three ships to protect a city from invaders, one ship at a time. You shoot by pressing the fire button and moving the joystick toward the creature you want to destroy. The enemy moves around the outside of the rectangular city and through the streets, so you have to watch out on four sides and duck down streets to avoid enemy fire. If they hit you or touch you, you're dead.

There are four bonus lights, and one moves out into the streets after every 12 missiles that you've fired. Move your ship over them, and you earn 100 points for the first one, 200 for the second and so on.

You have a limited amount of ammunition, and you have to replenish it every so often by running over a special character. Also, as you get better and score higher, the number of shots you get per reloading will go down—to increase the game's difficulty level.

You earn an extra ship for every 5,000 points that you rack up. You'll find that hard.

This game has a high frustration level, and there's none of the good-natured humor that you find in other shoot-em-ups like *Bandits*. It's a deadly serious game and you have to get those aliens before they get you. Frustrating? You bet. But *Crossfire* also has lots of interest and staying power.

Shoot and duck out of the way immediately—before those nasties get your range.

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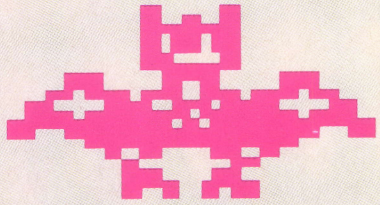
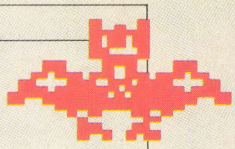




NIGHT GUNNER ★★★★

Softsync/Timex-Sinclair (16K)

By C.A. Brandt, Jr.

One minute you're loading a game tape, and the next you're suddenly in the rear gun turret of a World War II bomber. Bandits at twelve o'clock! Four enemy fighter planes are on your tail and your pilot can't shake them. You swing your guns around, trying to blast them before they can get you in their sights. Your tracer bullets cut through the night sky, blasting the enemy planes to pieces. But before you can celebrate, a faster group of fighters attacks and you must start again.

Night Gunner offers a realistic war simulation. You begin with a large supply of ammunition and four enemy planes. Each time you shoot down a squad of planes, you start over again—but the planes move faster.

The controls take some getting used to. If the enemy planes are on the left, you must push the left arrow key, which "moves" the enemy planes to the right.

By using a slight randomness for the enemy planes' flight, *Night Gunner* simulates what must be the genuine feel of aerial combat. At times the randomness is frustrating. Just when you have the enemy fighters in your gunsights, they fly out of reach. You're never quite sure when or how the enemy fighters shoot back at you, but at least you're allowed to take three hits before you crash.

To get higher scores, keep pressing the left and down arrow keys until you force all four enemy planes into the lower left corner. Then, switch your fingers to the right and up arrow keys. Keep pressing the right and up arrow keys. The pack of enemy aliens will all drift toward the center. When they are in your sights, you can blast them easily.

Night Gunner is a very good arcade-style game. It has fast action, simple rules and a skill level that keeps you interested. Best of all, each time you're shot down, you feel as if you could have done just a little bit better.

Warm up your gun barrel with a practice burst as the enemy fighter gets near the center. Your gun trigger is quicker after a recent shot.

CRIME WAVE ★★

Penguin/Apple

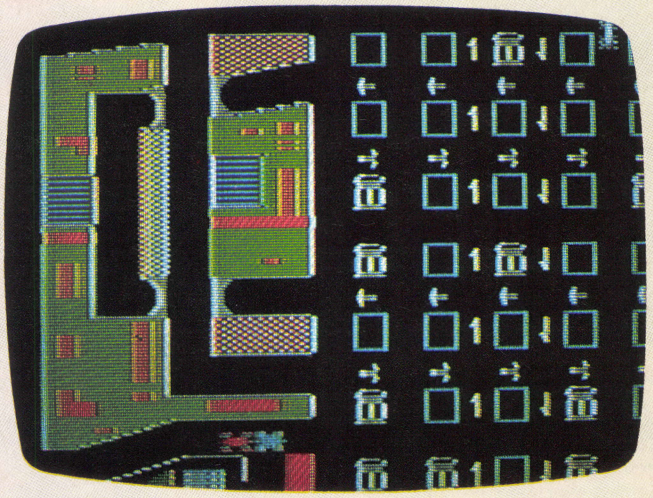
By Michael Blanchet

Since you play the cop and can never win, *Crime Wave* is open to rather dark interpretation. As the lone Blue Cruiser in the Big City, your job is to protect the banks from felons.

Once you start patrolling your beat, the criminals will rain down on the metropolis from the upper right-hand corner of the screen. You know that each one of these cars is out to rob a bank, but until they do you can't move on them. Remember, everyone is innocent until proven guilty.

Once any car in question stops in front of a bank, a robbery is then in progress. These guys work quickly. To collar a felon you need only bump into his car. If the robbery is still in progress, however, the screen will shift to the back door sequence. Here the perpetrator is trying to escape. Unless you shoot a cage (a cage?) at him, he'll return to his car, forcing you to resume the chase through the city streets. Once you have made contact with the crook's car, it will remain connected to your cruiser until you return to headquarters.

Crooks, like everyone else, have plans for those ill acquired funds. If any felon makes it back to his hideout unscathed, he'll trade his booty in for the "latest in anti-peace officer technology—The Robot Rammer." These machines have one purpose—to run



you down. To give you a fighting chance, the game offers you two courses of action: Either drop a bomb in the path of the Rammer (this rarely does any good) or face him head on with your shields engaged. The shields are also of limited value since their effectiveness is diminished with use.

Initially, *Crime Wave* is quite challenging. After a while though, the whole mess starts to wear thin. The playfield, like your duties, never changes. Just keep chasing those crooks. Is the tidal wave of crime and mayhem ever stopped? Never. Quite obviously there are a million crimes in the Big City. These are a few of them.

Drop your bombs along the road on the far left hand side of the screen. The Robot Rammers travel here often.

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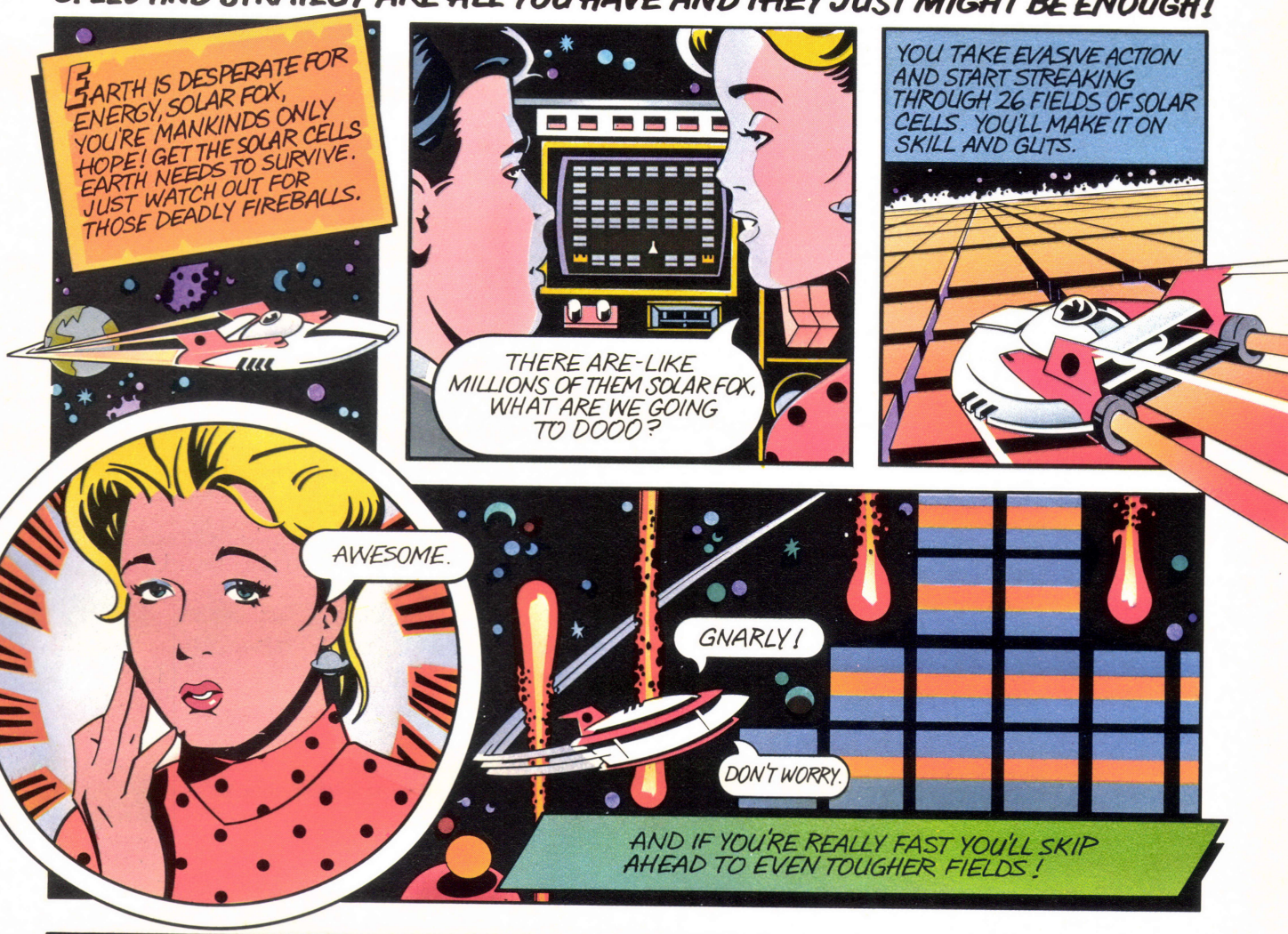

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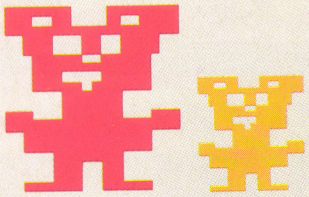


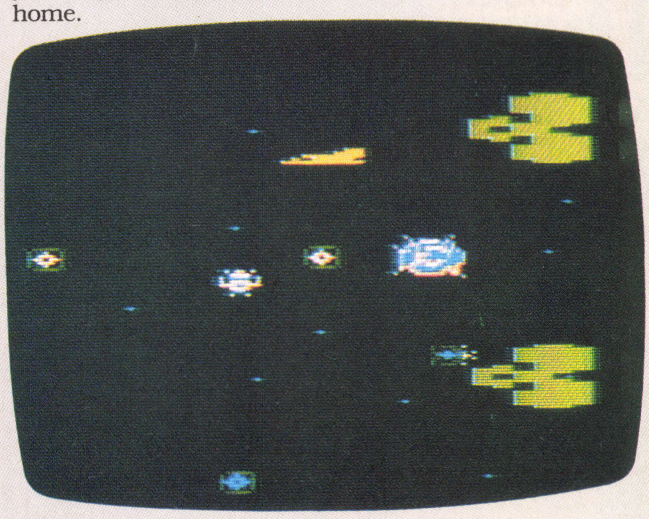
COLLISION COURSE ♪♪

ZiMag/Atari 400/800

By William Michael Brown

ZiMag doesn't make games anymore, but there's still a good chance you could run across this disk in your local computer store's bargain bin. If so, beware—from its *Alien*-outtakes cover art to its lame screen graphics, *Collision Course* is about as interesting and original as Parchesi.

The basic motif here is warmed-over *Defender*—a good choice, but badly done. Your job is to protect a trio of cargo ships returning home from a five-year mining expedition. All four of you are heading through a particularly dangerous part of the galaxy that seems to be lined with floating mines and killer satellites. Your escort cruiser comes with guns to nail the mines and satellites as well as a shield to protect you from them—but the shield time is very limited (about six direct hits will do you in). You're up against a time limit for completing your mission, and you must complete it—you've got to make sure that those cargo ships make it home.



Along with four different skill levels, the game contains four different types of mines—well, make that three, since the regular and "Mirus" mines are exactly alike, except for the way they're depicted on the screen. There are also smart mines that try to chase you, and accelerator/decelerator "beacons" that speed up or slow down your convoy whenever you hit them.

The gameplay and graphics will make you wonder why you need 24K of Atari computer memory to play it. You've got a very short amount of time to get through all three mine fields, and the cargo ships are such big, dumb targets that you can just about count on losing all but one of them (the designer must have counted on it too—you only have to get one ship home to win a round, and there's a *huge* point bonus for getting another one through). Boiled down, *Collision Course* is your standard space shoot-em-up with all the excitement surgically removed.

> Once you're a little skilled at blowing up the mines (concentrate on accuracy), start exploiting the accelerator/decelerator beacons for a high score.

WORMS? ♪♪♪

Electronic Arts/Atari 400/800/1200

By William Michael Brown

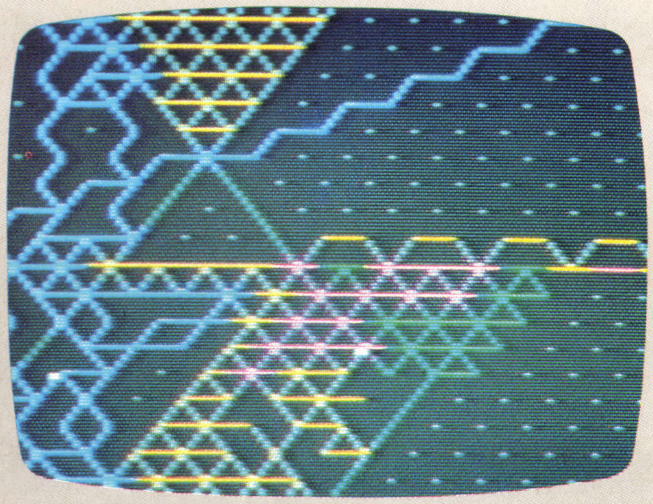
"You will find detailed instructions enclosed. Do not read them. Instead, sit down and get started. Don't ask how. Just start. You know how these things work... Resist them. Do not read them for a very long time. In fact, do not read them until you know how the game works... Then never read the instructions. Innocence is bliss."

That advice is the very first paragraph of the jacket notes to David S. Maynard's *Worms?*. Now, I've never met Mr. Maynard, but after playing *Worms?* for about 20 hours, I can tell you that he has probably the most original, refreshing and seriously *weird* imagination of any video game designer today.

What do I mean by "seriously weird?" Well, basically this is a game right out of *Steppenwolf*: "Magic Theatre—Not for Everyone." There are no ramps to climb, no Invaders to fry, no Gorfs or Defenders or death-dealing wizards here. But if you're tired of all those game cliches and want something that really uses the potential of your computer; if you're a fanatic for the turf-stealing subtleties of Go; if geometry was your favorite subject at school *because you liked the pictures*; or if your single most favorite magazine column was Martin Gardner's "Mathematical Games" in *Scientific American*—then, my friend, prepare yourself for a diet of *Worms?*.

The basic *Worms?* variation puts you and up to three friends in command of worms that lay trails from dot to dot in a big hexagonal grid. Each dot is the center of a territory that can be captured (score: one point for each territory) by the worm that lays the very last (sixth) trail in that territory. Each worm has to be trained at the outset on where to go in different situations—say, whether it's the the first or fifth worm to lay a trail into a particular territory. Once trained, they recognize patterns and go on autopilot, merrily laying trails until they come to another situation they haven't been trained for, at which point they stop and await your command.

The fact that you can rip off some other worm's territory just by being the last one to lay a trail in it gives *Worms?* all the strategic fascination of ancient,



classic games like Go and chess. Combine that with the beautiful colors of the worm trails, and the fact that all the sound effects are keyed by particular movements of each worm, and you've got an aesthetic extravaganza of a game. All four worms going at it hammer and tongs sounds like a shimmering electronic fugue, and the colors of trails and territories seem to constantly run through the spectrum as the advantage shifts from player to player. You can also save particularly crafty worms to disk for later use; play against any number of smart or stupid computer-controlled worms; or combine your instructions to the worm with the ccmputer's ideas for an odd mixture of hard logic and human inspiration.

As I said, not for everybody (that's why it's getting only three joysticks). But if you want challenge—and are dying to find a little originality among the humdrum pre-fab games being put out today—*Worms?* is your meat.

Save your first worms on disk and start experimenting with variations on your most successful tactics.

MOUSKATTACK ***111***

Sierra On-Line/IBM PC

By Hartley G. Lesser

Plumbers have it made, you say to yourself. After all, they earn enormous dollar amounts per hour for repairing sinks and other ceramic entities that have gone awry. Well, think again, folks. *Mouskattack* certainly leaves little doubt that a plumber's joint can be far from a happy one.

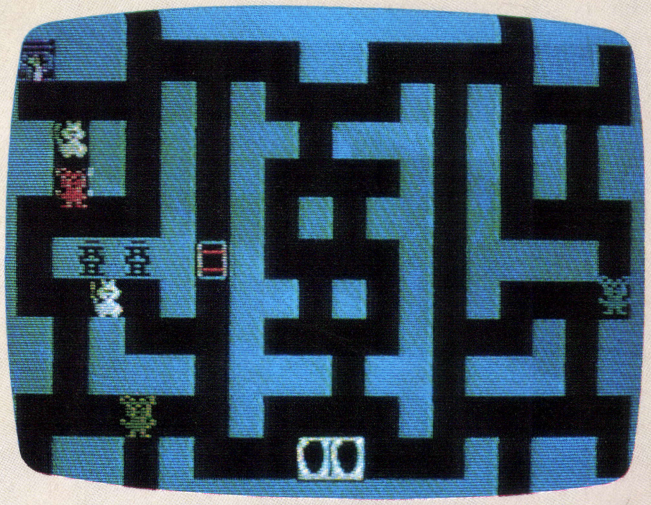
This arcade-style game presents the player with the unfortunate predicament of Larry Bain, ace plumber and rodent runner, who has been hired to lay piping in Rat Alley. Larry is controlled via joystick or keyboard, with the former the choice of most gamers due to its exacting control. You define the keys for UP, DOWN, LEFT, RIGHT and CARRY control when using the keyboard.

You start this maddening game with three plumbers, two cats and a single trap. The trap holds the rodents—which seem to arrive from nowhere—only temporarily. Your plumber must run over the trapped renegades from a Roquefort nightmare to rid the maze of them. Should a rat manage to escape the trap, it graduates into a Super Rat.

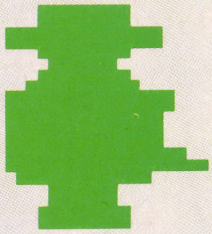
Your two cats are pretty useless, as they turn out to be as afraid of the rodents as the rodents are of them. Using your CARRY capability, however, allows you to place your cats wherever you want them in the maze. Their presence turns the normal rodents from their course. The Super Rats, unfortunately, hold your felines in little regard—in fact they totally ignore them, which is of no benefit in your harried circumstances.

As you maneuver your plumber throughout the maze, lengths of pipe are laid behind him. In order to gain victory, Rat Alley has to be totally piped. But with the incessant arrival and constant movement of the rats, victory seems a distant goal. In addition, not all of the pipe you lay is connected. This requires going back over certain lengths of pipe once, twice, three or even four times, to fix the constructions. Very hard on the nerves.

Mouskattack is very challenging, as progress into the second level takes a great deal of work. My single complaint is that the screen representation of each rat looks a good deal like a teddy bear. Something that cute shouldn't be so bloody fatal.



The trap's not heavy, it's my guardian.



STARCROSS ★★★★

Infocom/Atari 400/800

By Jim Gasperini

Somewhere near the asteroid Ceres, Infocom's first all-text science fiction adventure makes the jump to hyperspace: computer *game* becomes computer *fiction*. Somewhat easier to solve than *Zork*, not as technically innovative as *Deadline*, *Starcross* still presents enough puzzle-solving challenge to keep the practiced adventurer intrigued, but its greatest strength is its well-structured novelistic plot.

It's 2186. You're tooling around the asteroid belt in your prospecting ship when your instruments record a mysterious mass nearby. After navigating your way to its vicinity, you find yourself wandering the labyrinthine corridors, ravaged zoos and mysterious laboratories of a seemingly derelict interstellar artifact.

What is this huge alien ship? Why did it seem prepared to welcome you? What are the uses of the 12 colored crystal control rods you find scattered here and there? Other alien explorers have tried to find the answers before you, it seems. You come across the results: eternal boredom, violent tragedy, reversion to barbarism. How did they fail, and what had they tried to do? Will you be the one to meet the challenge?

Starcross proves once again the versatility of Interlogic's multiple-command structure, full sentence recognition capability and extensive vocabulary. Though many story features are repeated here, *Starcross* is more than *Zork in Space*. Great care has been taken to present an alien world as if you are, in fact, the first human being to pay a visit. Though most puzzles ask you merely to find the correct use for the various objects you come across, rather than demanding the execution of a complicated series of interactive steps, there's a clever rationale behind each clue. Many can only be understood by imagining the alien mind that constructed them. Others call for the application of basic real-world scientific information, like atomic numbers and the laws of thermodynamics. Though most of the spaceship can be quickly mapped out without obstructions, there are still plenty of surprises in store.

SPY'S DEMISE ★★★

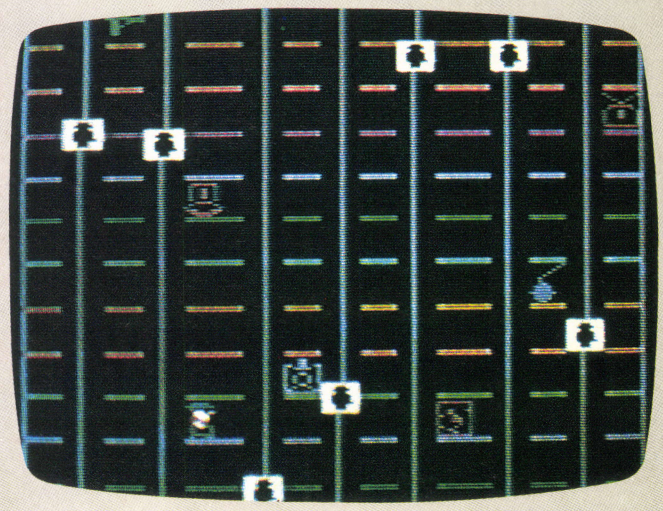
Penguin/Atari 400/800/1200

By George Kopp

While Thai-ing one on at the bar in the Bangkok Hilton you overhear two KGB agents discussing secret plans—so secret that each part of the plan is hidden on a different floor of the Russian mission at Pyongyang. That's the premise for *Spy's Demise*, a thriller that could just as easily have been called *Tinker, Tailor, Soldier, Elevator Operator*.

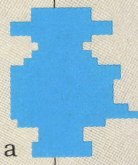
The mission itself is a tribute to functional socialist architecture, namely a simple grid. You move across the grid while embassy guards ride elevators up and down. Run into a guard and you die in what looks like a mushroom cloud. Along the way you pick up pieces of microfilm, not-too-well-concealed weapons and other spy paraphernalia. You don't have to go out of your way to collect these goodies—they're just there, waiting for you to run over them. A few appear and disappear at random, and quick action can net you a bonus.

At the bottom and top of the screen it's pretty easy to get across. You have lots of time to determine your moves as the deadly elevators ascend and descend. In



the middle levels, however, you're attacked from both sides with dreadful insistence. You can't stop your spy—you've got to master the art of trying to hold him in one place by swift back-and-forth joystick action if you're going to survive. Get to the top of the screen and you're rewarded with a portion of the encoded message. Decode the entire message and you may be eligible to win a *Spy's Demise* T-shirt.

The graphics are good, the action is nervewracking (though somewhat monotonous) but the music is outstanding. Your spy plays a bit of the James Bond theme, then you hear nothing but Russian melodies. Last month in the article "Roll It Over, Beethoven" I told you about "Vniz po matushke po Volge" but I neglected to mention "Vniz po Volge-Reke" in which a young oarsman begs his comrades to "Throw me overboard to Mother Volga. Drown then deep in her all my pain and woe." Seems there was this girl, see...



Don't be afraid to backtrack rather than stand still. It may be your safest way out of a tough predicament.

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OFF THE BEATEN TRAKBALL

The Russians are playing!

An exclusive peek behind the Iron Curtain

While there are no electrical outlets in the Iron Curtain, there are video games behind it. Information about the hot games of the Soviet Union is scarce. Fortunately, we've got an informant and it is because of him that we are able to bring you this exclusive expose of games of Russia. So, come, Tovarisch. Plug in Atarski system and play furious round of Comrade Pac-Man *or, perhaps, you would prefer spirited game of* Fast Food Shortage, *da?*

By Randi Hacker

Whether or not you're aware of it, it's possible that many of you have been doing Russia a grave disservice over the years. You probably think they don't play games in the Motherland. This is untrue. They play lots of games and some of them even have rules. Russians, in fact, are well-known for their keen sense of fun.

Look at Rasputin (if you dare). Now that was one fun monk. And not only was he a real joker, he was the kind of guy who could take a practical joke pulled on him in good spirit as well. His friends once threw a party for him and gave him a drink laced with poison. As if that wasn't funny enough, the topper of the evening (and perhaps one of the most humorous things to ever happen in Russian history) was that they then gave him several blows to the head with a sharp axe after which they threw him in the river. Yet, did he hold it against them? No way, Yuri! He dragged himself out of the water to laugh in their faces. It was that attitude—that and the way he pronounced "v's" so they sounded like "w's"—that made him so popular in imperial circles.

Grounded (or buried, if you prefer) in a tradition like that, how can we accuse the Russians of being workhorses? We can't. Especially when we are reminded of the age-old Russian saying "Rastvyetali yabloni y grushi" which loosely translated means "The pear trees are in bloom" or, even more loosely, "All work and no pay makes comrades more obedient to the mandates of the State."

Collective Fun

Before the Bolshevik Revolution in 1917, jokes were more or less a private and individualized matter. If someone told a joke and someone else in the group didn't get it, he was humiliated when the group broke into raucous laughter, stomped their cossack boots and jiggled their persian lamb caps and he didn't.

After the Revolution, all jokes became property of the State and were told at given intervals (determined by the government) throughout the year. A joke was told and each and every citizen was obligated to hear it. After a period of five years was up and everyone had had the chance to get it or have it explained to them, there was collective laughter. This was known as the Five Year Plan.

Naturally, this profound sense of the ridiculous made Russia a fertile crescent for video games, but news of the games—and which ones are hot—is hard to come by. Our comrade in the Kremlin has managed to smuggle out through the Iron Curtain via the underground railway and the Lexington Avenue IRT, certain exclusive information about the games of the USSR. We are the only magazine privy to this inside stuff. As odd as it may seem, Russians play games that are remarkably similar to our own. The main difference is that high scores are not entered on the machine. High scores become property of the State.

As you can probably imagine, it's pretty tough to get any information from behind the Iron Curtain. This is because they rarely open it up. It's kept closed primarily to prevent the sun from fading the furniture. This then is an exclusive peek behind the drapes at games that are played in the Soviet Union.

Russians love games. Pictured on the opposite page is a graphic from COMRADE PAC-MAN, one of the most popular games in the Soviet Union. It's similar to our own PAC-MAN only red. Above is a scene from FAST FOOD SHORTAGE in which you've got to try to get enough food to feed your family before government officials grab it for themselves.

Illustration: Greg Couch

One of the most popular games to appear on the Soviet scene in recent years was *Comrade Pac-Man*. The main character resembles our own *Pac-Man* except that he wears a hat and leans toward the color red. The object of the game is to eat all the little dots in a maze. You are pursued by your comrades who want to turn you in so that *they* can have the dots. Located in the four corners of the maze are hammers and sickles which, if eaten, render you impervious to Western Propaganda. There is no way out. *Comrade Pac-Man* is beloved by all Russians particularly because of the sounds he makes: "Vodka, vodka, vodka."

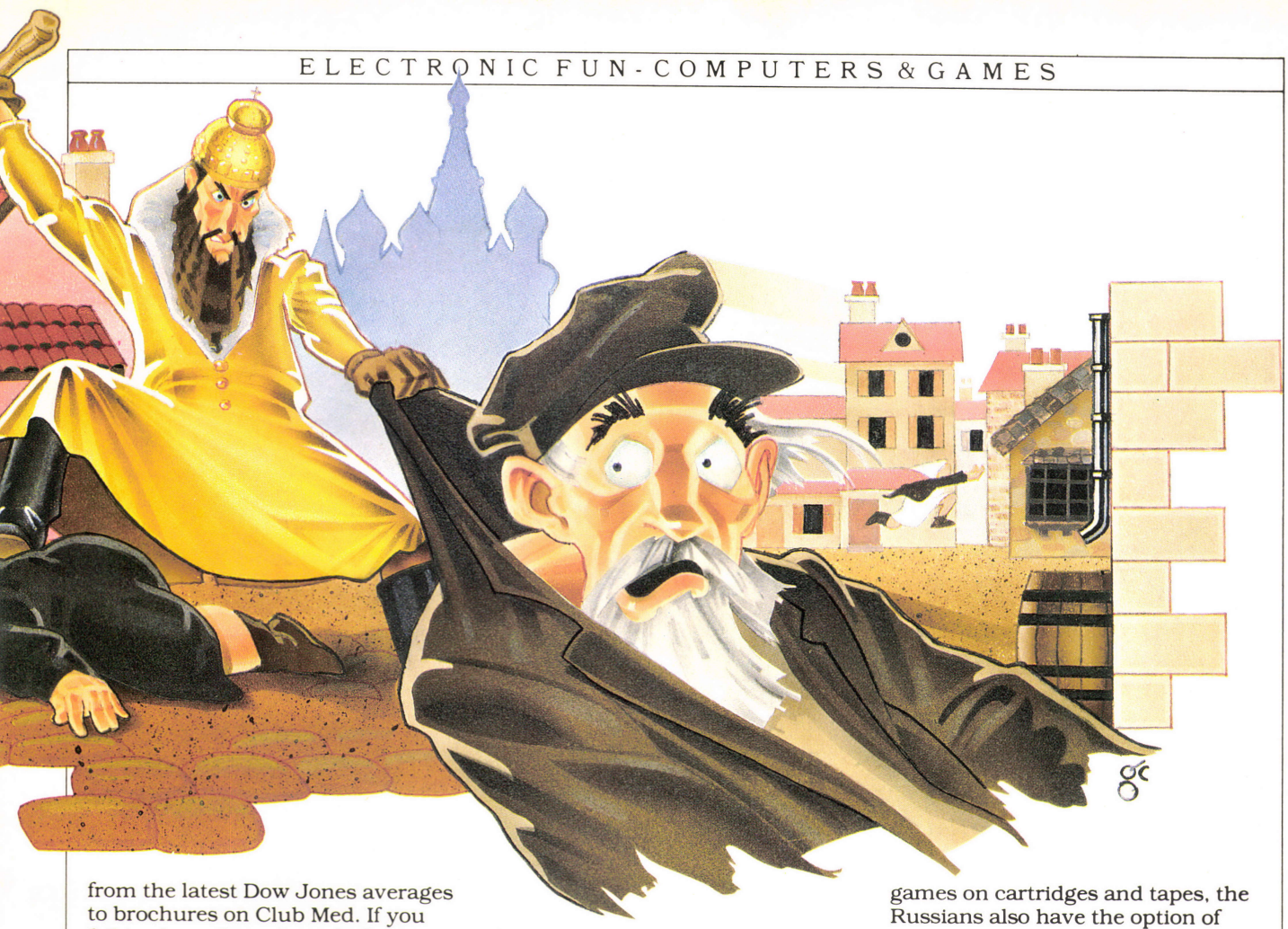
Sound And Furry

Another big favorite among the Soviet gamers is *KGB's Krazy Chase*. Also a maze game, this one involves a furry little creature with great legs who is trying to escape from a passel of KGB secret police who want to capture him and send him to Siberia. The central character has to find his way clear of the agents. Every once in a while, an exit appears on one of the sides of the maze. If our hero is quick, he can zip out of this doorway and defect to the West where he gets to join the American Ballet Theater.

KGB's Krazy Chase is one of the few Russian cartridges with a voice feature. Every once in a while, your man chimes in with helpful hints such as "Leningrad!" or "Boycott the 1980 Olympics!" or "Everyone choose your partner for the troika!" While these don't actually get you out of any dangerous situations, they do afford you an excellent opportunity to improve your Russian pronunciation.

One of the games whose title really shows off the Russian comedic sense to perfection is called *Capitalist Mutants from New Jersey* in which communist ideals are pitted in a laser fight against capitalist propaganda. In the first screen, a mother mutant dressed in an Yves St. Laurent suit, Capezio shoes and carrying a Gucci shopping bag, floats over the skies of Moscow directly above the Kremlin. In the background, "Ohh la la Sassoon" plays over and over again.

After this brief introduction, she reaches into her bag and begins to sow small seeds which, while falling, transform into Wall Street brokers in top hats, cutaways and diamond stickpins. They fall slowly to earth in a sort of humanoid rainstorm pattern. As they fall, they distribute all sorts of leaflets



from the latest Dow Jones averages to brochures on Club Med. If you fail to shoot them down before they hit the steppes, you're faced with the unpleasant task of shoveling them all into a deep pit and burying them before they turn the minds of the workers into ruble-hungry vacuums.

One Potato...

Never let it be said that the Russians can't laugh at their own short-comings. The game *Fast Food Shortage* is testament to their rapier wit when it comes to themselves. In this game you are several poor but happy workers on your way home from the tractor factory. Suddenly a free-floating mouth resembling those chattering wind-up teeth that used to be sold in novelty stores informs you that a fresh shipment of potatoes has just arrived at your neighborhood grocery story. If you hurry, you can probably still get one for dinner for the family.

Using your joystick, you hyperspace down the block only to find that the rest of your little village has gotten there ahead of you. You've got to shoot them one by one while avoiding members of the Kremlin who flash priority cards in your face and demand "frontsies."

If you succeed in clearing the screen, you find yourself in a second screen in which potatoes fly at you from all sides. No matter what you do here you lose. If you catch them all, you are accused of anti-socialist tendencies and are never heard from again. If you drop one, you're never heard from again.

Czar's Revenge is one of the most well-loved games. It transports the Russians back to the time of the Czar when everyone was stone broke except the royal family—which had hemophilia. It takes place in the Winter Palace. Ivan the Terrible, dressed in what appears to be his bathrobe, wants to put down a peasant revolt. Your job is either to prevent this or not. Your weapons consist of a hammer, sickle and the ability to dance a mean kazatski. Lashing out with your boots, you render the Czar unconscious and take over the government in the name of the people. Later, you change it to your own name.

In addition to being able to play games on cartridges and tapes, the Russians also have the option of receiving games on-line. This service is known as Games Nyet-work and it offers such popular titles as *Krushchev, Crumble and Chomp* and *Crimea Wave.* This is a new service and currently they are working on getting the bugs out of the programs and putting them into the telephone wires where they belong.

If you think that playing Russian games is difficult, you ought to try programming in Russian BASIC which is similar to our own only a lot more imperative. In Russian BASIC there is no GOTO statement. There is only a GOTO OR ELSE command. And Russian GOSUB commands are generally nuclear GOSUBS many of which were sighted off the coast of Sweden.□

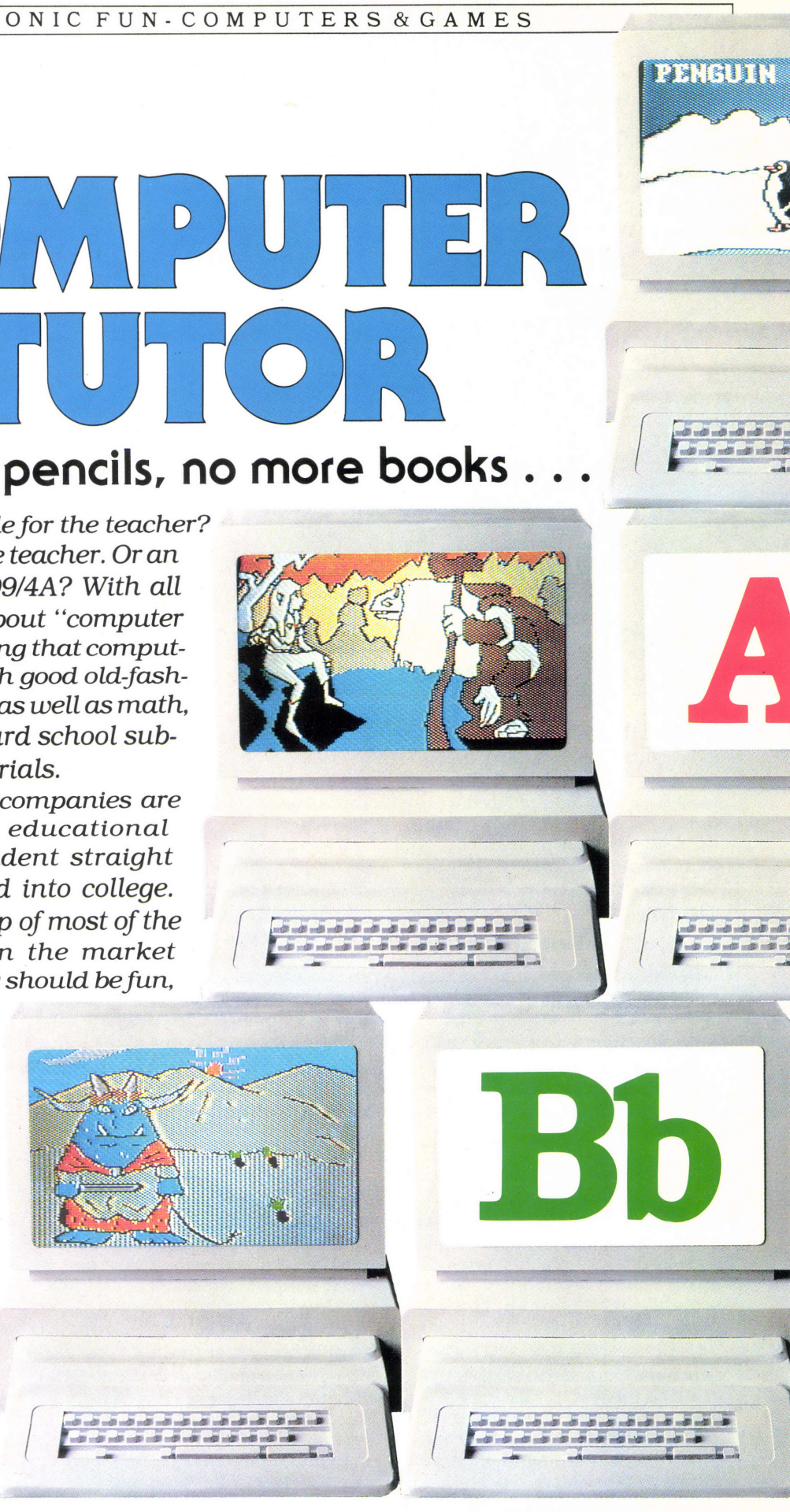
More games from the Motherland: On the opposite page, a screen from CAPITALIST MUTANTS FROM NEW JERSEY in which it rains cats and Capitalist dogs. Above, a scene from CZAR'S REVENGE which transports you back to the time of imperial Russia and lets you play the Winter Palace. Most of the video game cartridges are sold at Tolstoys R Us outlets.

COMPUTER TUTOR

No more pencils, no more books . . .

You've heard of an apple for the teacher? How about an Apple as the teacher. Or an Atari, or a VIC-20 or TI-99/4A? With all the talk going on today about "computer literacy," it's also refreshing that computers are being used to teach good old-fashioned literacy—reading—as well as math, science and other standard school subjects, including SAT tutorials.

In fact, some software companies are planning to introduce educational programs to take a student straight through high school and into college. What follows is a roundup of most of the educational software on the market now. If you think learning should be fun, you're not alone.



Paper Sculpture: Adam Kurtzman

By Marc Berman

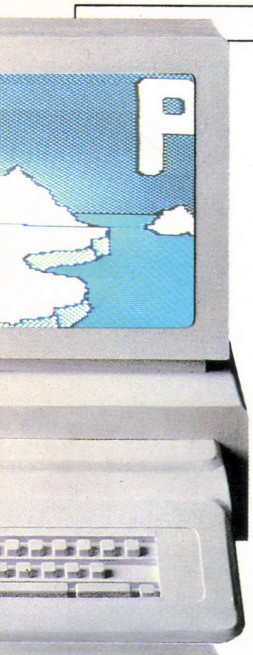
"So here comes another crew of educators, psychologists, marketing wizards and assorted goody-two-shoes, saying that learning can be fun. Ho-hum," you say. "What have they got this time—not more puppets, I hope."

Okay, okay, no hype. We know a lot of people think that once you start school, learning becomes about as much fun as starched shorts. Take any breathing, thinking creature and make it sit still for 12 years, and you're likely to numb the old synapses.

Well, software manufacturers think that computers can

help relieve the boredom of education. They are pushing a new philosophy of "experiential learning." For your average yokel, that means hands-on programs. What makes them so hot is action and gameplay capabilities, fantastic graphics and the contributions of NASA, Children's Television Workshop, leading scientists, surgeons, animals and aliens of all kinds.

Take science, for example. Atari will soon offer enough gear to turn your 400, 800 or 1200 into a Mayo Clinic of medical services. The first in a series of programs will be a temperature monitoring system with sensors. Budding Doctors Frankenstein will be pleased to know that Atari will follow up with heartbeat and reaction time modules and accompanying software. Also part of the Atari Lab series will be a lie detector module so you can get the truth, in case your monster turns out to be a liar as well as big, green and stupid.



In a similar vein (and I mean *in* the vein) is *Microscopic Journey*. This Apple program from Hayden Publishing puts you at the helm of a microsubmarine, traveling the highways and bivalves of the human body, blasting cholesterol, killing cancer cells and wondering why this is so familiar. The similarity to a movie starring Raquel Welch is probably no accident. The similarity of these graphics to a real human body is definitely on purpose, from the sinuses to the bunions.

Spills and Fills is a science program designed to teach quantities, measurements and displacement. It's from Creative Software for the VIC-20. It lets fourth through eighth graders experiment with liquid volumes without the risk of messing up the kitchen or losing the goldfish down the sink.

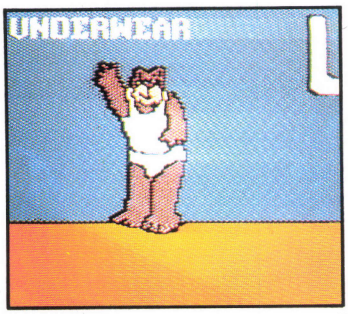
Dog Star

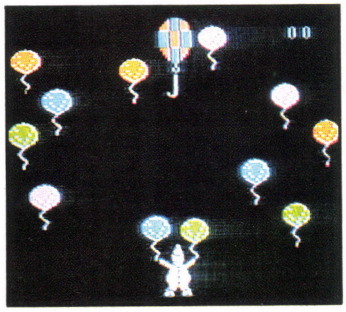
Speaking of pets (and I don't mean the computer this time) there's *Benji's Space Rescue*. Yup, that impossibly cute canine will teach you about the planets and their distances from each other. He can also roll over and beg for oxygen. Designed for kids up to 14 years old, this is one of a series of Benji programs for the Commodore 64 from Human Engineered Software (HES).

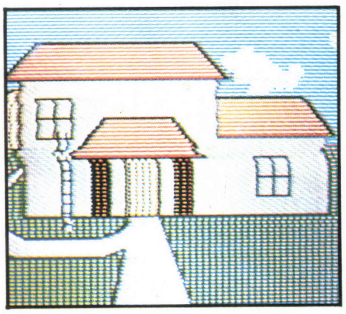
Most of the educational software out now is in math and English skills, and if you tried it all, you'd be at the keyboard for years which would be fine—you can work your way from pre-school basics right up thru SAT tutorials without missing a lesson.

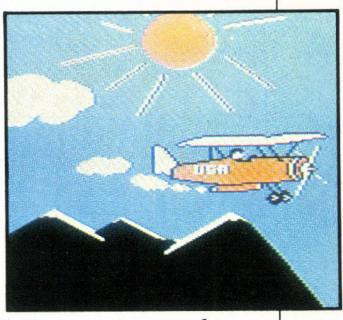
At age three you could start with *Stickybear ABC's* from Xerox. This is just one of the Stickybear series which has some of the most gorgeously plump and appealing graphics we've ever seen. The program comes with a picture book, poster, Stickybear stickers and a dribble-proof laminated cover. Each time you press a

Top: STICKYBEAR ABC's by Xerox Educational Publications; second row: DARK CRYSTAL, left (Sierra On-Line), MONKEY MATH, right (Artworx), bottom row: TROLL'S TALE, left (Sierra On-Line), FUN WITH ART, right (Epyx).









letter key, a short and beautifully animated cartoon illustrates a word starting with that letter. For instance, if you press "C," Stickybear sneaks up on some cake. For the letter "U," Stickybear models his Calvin Klein underwear.

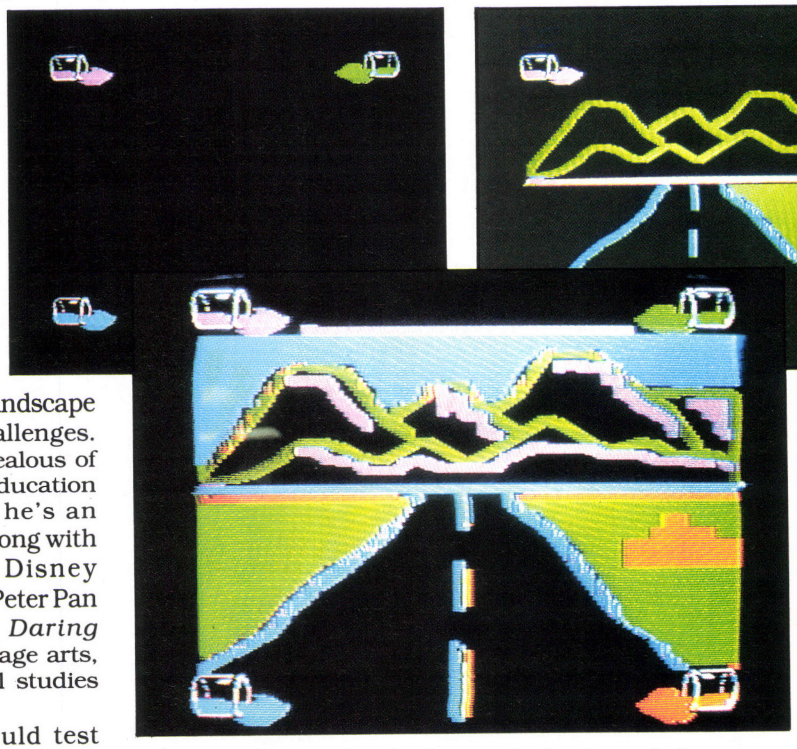
At the tender age of six you might want to try *Mickey and the Great Outdoors* from Atari. (Of course, you'll need an Atari in addition to your Apple.) Yes, Mousketeers, your old pal, Mickey has turned to teaching, as he hikes across a landscape of grammar challenges. Maybe he was jealous of Goofy's driver education film. Anyway, he's an educator now, along with a few other Disney characters, like Peter Pan in *Peter Pan's Daring Escape*, a language arts, math and social studies program.

Next, you could test your progress with *Spelling Bee* with Reading Primer from Edu-Ware, or with *Electronic Flash Cards* from Avant-Garde. (Better dust off the Apple.)

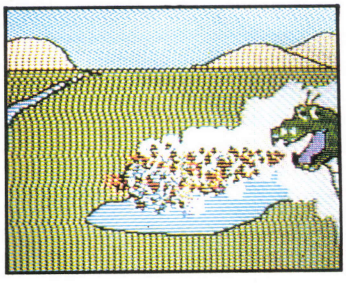
After you've mastered reading and spelling you can write your own story and watch it animate itself with *The Story Machine* from Spinnaker. Or you can finally take vicious and satisfying revenge on all the words that give you trouble in *English Invaders*. That program from Comm* Data features falling nouns, verbs and adjectives. Points are awarded for direct hits. (No points for dangling participles.) You'll need a Commodore 64, VIC-20 or PET computer to play it.

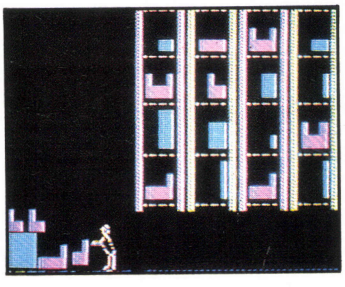
Future architects can begin their careers by practicing their building techniques in *High Rise* from MicroLearn. In it you are a subcontracted construction engineer who chooses different shaped blocks from several different vertical conveyor belts. You push the block forward, press a key and flip the block to the construction site. Each block is flipped in a similar way and the object is to build a solid structure up to a height specified by the computer without having it topple over because you used inferior balancing techniques.

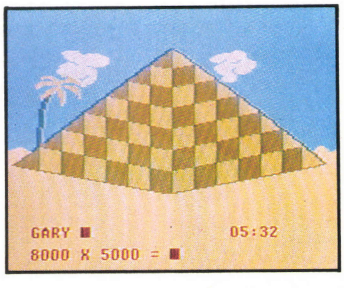
Suddenly you find yourself at junior high school level in your studies and you've never left your room. *Descriptive Reading* from Educational Activities Inc. tests your comprehension of English in six areas:

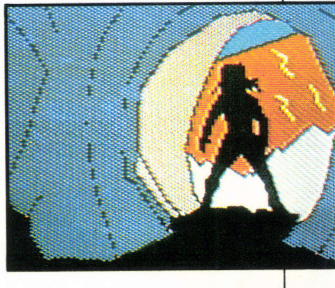


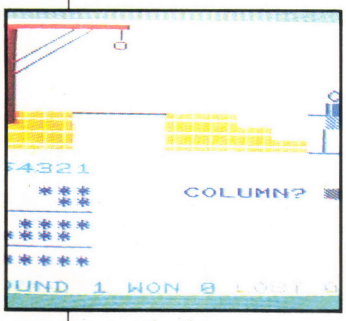
Designers of educational software don't stint on lush graphics. Top, left to right: STICKYBEAR ABC'S (Xerox), LEARNING WITH LEEPER and DRAGON'S KEEP (Sierra On-Line), READING FLIGHT (Roklan), HANGMATH (Creative), ALPHABET ARCADE (PDI), BOP-A-BET (Sierra), STORY MACHINE (Spinnaker). Bottom, left to right: DRAGON'S KEEP, HIGHRISE (Microlearn), PYRAMID PUZZLER (Roklan), DARK CRYSTAL (Sierra), FUN WITH MUSIC (Epyx), TYPE ATTACK (Sirius), LEARNING WITH LEEPER, TROLL'S TALE (Sierra).

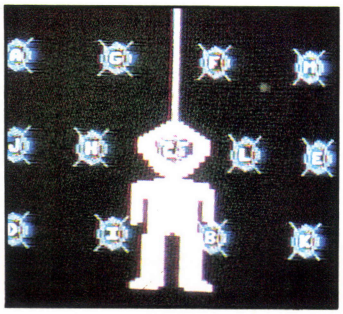


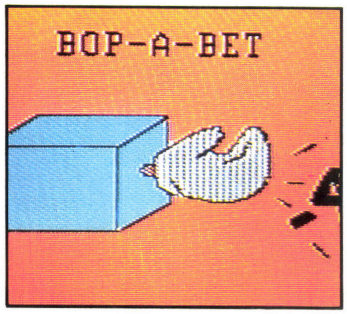


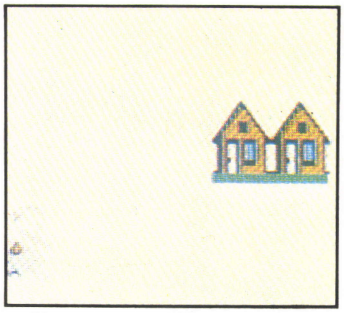












vocabulary, sequence, main idea, fact and opinion, details and inference. And you can run it on your Apple, PET, TRS-80 or Atari machine, all of which you've probably accumulated by now using the money you've saved in school supplies.

Finally it's time to apply to college. Better get the *English SAT Tutorial* from MicroLab. One good thing about it is that it explains your wrong answers. Once you've mastered the SAT's, you can try *Mastering the College Board Achievement Tests*, five Apple or IBM disks from CBS Software.

Math freaks need no longer be ashamed of their predilection. With the coming of the computer age, math is cool. So pull up your socks and boot into *Monkey Math* from Artworx. In this simian simulation program for the Apple, Atari or VIC, three little monkeys power a treadmill that carries equations onto the screen. A big gorilla at the top pounds on a given answer which tumbles into a hopper and lands next to the equation. If Artworx weren't worried about a lawsuit they might have called it *Donkey Kong PhD* except most five-year-olds don't know what PhD means.

There's also *Stickybear Numbers* from Xerox and *Grover's Number Rover* from Children's Computer Workshop for younger scholars.

Most educational games come with ample support material. The Stickybear series from Xerox, for example, comes complete with a picture book and pop-out Stickybear made of tough cardboard and designed to be a tossing game using the characters from the computer game. On the facing page, center, is LEARNING WITH LEEPER from Sierra On-Line, a learning game which uses no words, designed for pre-schoolers. One game lets you create your own pictures with a paintbrush.

Grover provides practice in counting, matching numbers and simple addition and subtraction on the TRS-80 color computer.

Math Invaders and *Bomber* bring space age graphics to math drill. *Invaders* from Comm*Data is for the Commodore 64, VIC and PET. *Bomber* from Compuware is for the Atari 400/800 and lets you get out your aggression toward your math teacher by blowing up fractions.

For sports enthusiasts there's *Fraction Fever*, in which you bounce off of fractions with your pogo stick. It's a joystick game on cartridge for the Atari 400/800/1200 and the Commodore 64, from Spinnaker. It has 12 levels and a few nasty holes you can fall into between various calculations.

You can really get tripped up with Creative Software's *Math Hurdler*. If you answer the addition, subtraction, multiplication or division problems incorrectly, the runner suffers the agony of defeat as he smashes

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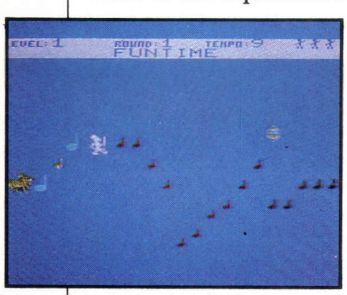
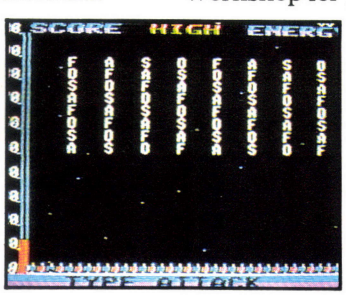
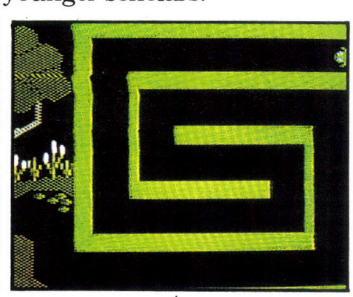
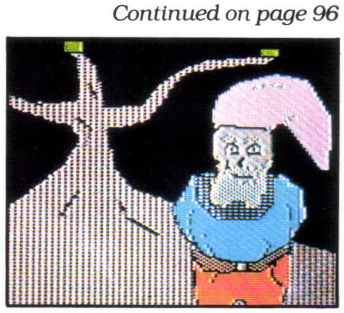








COMPUTER WORKOUT

VZ does it

Video Technology's VZ200 computer

Here's one of the latest in the under-$100 computer category. The VZ200 has 12K of RAM and built-in BASIC, as well as some other features you might not expect to find on such a low-priced machine. The question remains, though: Will there be software support for the system? Right now it's too early to tell.

The VZ200 computer is smaller than the average notebook, has Microsoft BASIC and, we're told, its initial 4K of memory can be expanded to as much as 64K. Below: printer and joysticks.

By Jules Gilder

Advancing computer technology carries with it promise and problems, both for people who are thinking of buying a computer and for the people who are making them. The good and the bad of the new low-priced computers is embodied in the VZ200, designed to sell for under $100 by a company called Video Technology.

What we're faced with all in all is an adequate machine that does what it's supposed to do, but with competition from such heavyweights as Commodore, Timex, Mattel, Atari, Coleco and Texas Instruments, we can't help asking if the world needs a new low-priced unit from Video Technology. Can we reasonably expect to see sufficient software for this machine when software makers already have their hands full? This is a critical question, and at this point no one has the answer.

Aimed at the student market, the VZ200 measures only 11.5 × 6.5 × 2 inches. The unit comes complete with 12K Microsoft BASIC in ROM and is capable of displaying up to nine colors. The basic unit comes with 4K of RAM and is said to be expandable to 64K.

The VZ200 will be marketed through toy distributors. The unit we reviewed was obviously a prototype. Inside, all of the identification numbers were rubbed off the integrated circuits, so we don't know what microprocessor is used. When asked, the distributor didn't know either. Inside the case, one circuit board, which appeared to contain the video circuitry, was held in place with masking tape.

In addition to the unique method used to assemble the computer, there were some other things about it that were bothersome. The evaluation unit came with no power supply module, no video cable and no cassette interfacing cable. The only reason we got a manual was because we asked for it. It's a draft of the manual dated November 19, 1982, but it was apparently for an earlier version of the computer that didn't make it to market, the VZ100.

Hookup Hangups

Getting the computer up and running was not an easy chore because no power supply was provided, although the literature that accompanied the computer said that a nine-volt, 800 ma supply was needed. Finding an old video game supply that fit the bill, the next step was to find out what the polarity was on the connector so the voltage would be properly applied. This required taking the computer case off and inspecting the printed

circuit board inside. This is when I discovered that none of the integrated circuit chips had any markings on them and that one of the printed circuit boards was held in place with masking tape. Careful examination of the main circuit board revealed the correct connection polarity, and the power supply was successfully connected to the computer.

Mystery Power

Next, I had to search for a spare video cable and antenna switch box, because neither of these were provided either. With the television connected, the READY prompt appeared and I was ready to start programming in BASIC. A real handy feature of the computer is a special jack to which a video monitor can be connected directly. The video quality should be—and was—much better on a monitor than on a television.

By the way, you may have noticed that nowhere did I mention that I turned the power on. I didn't. In spite of the fact that the brochure describing the computer states that it has a "unique power on-off switch" none was found and the computer came on as soon as the power supply was plugged in.

Next, an unsuccessful attempt was made to connect a tape recorder to the computer. The manual provided says that there are two jacks marked MIC and EAR to which any standard audio cassette recorder can be connected. There aren't, but maybe there were on the VZ100. With regard to cassette recorder connections, the brochure says that, "Everything hooks together with simple standard plugs and all are clearly labelled." Yes, the one jack provided on the computer is clearly labelled TAPE and it does seem to use a standard jack, but they don't give you any clue as to how this standard jack gets hooked up to my standard tape recorder.

While all of the jacks are clearly labelled, edge connectors aren't. There are two of them on the VZ200 computer apparently meant for expansion and printer interfacing. The mystery is which one does what.

Like some of the other inexpensive computers that have been announced recently, this one also uses a rubber-key keyboard. However, unlike some of the machines we've tested, this implementation of the keyboard is pretty good. To begin with, there is a definite mechanical click when a key is pressed. More important, it is very difficult to press the key and not have it register, eliminating a lot of frustration that is usually associated with this type of keyboard. The keys are spaced so that it is easy to place a template over the keyboard so that certain keys can be assigned certain functions. Another excellent feature of the keyboard is a special key called INSERT, which lets you add information to a line already on the screen.

The keyboard does have its problems, though. While the layout of the keys is close to that of a standard typewriter, it's not identical.

Shift The Shift

The space key, which should be placed underneath the last row of keys, is off to the right where the shift key would normally be found. Through an interesting scheme of triple shifting, up to four different functions can be assigned to each key. Since only uppercase letters are provided, the SHIFT key is used to access most punctuation marks and symbols. The BACKSPACE key, which is supposed to be the SHIFTed SPACE key, does not work, although CTRL-M function does.

By pressing the CTRL key and another key, certain functions such as INSERT, RUBOUT (erase the last character typed) and cursor control can be accessed. Another feature implemented with this key sequence is BASIC shorthand, where one key is pressed to enter a complete BASIC keyword. Since there are

Continued on page 95

Peripherals for the VZ 200 include the cassette drive and joystick interface pictured above.

GAMEMAKERS

DESIGNING WOMAN

Meet Carol "Happy Trails" Shaw, Activision's leading lady

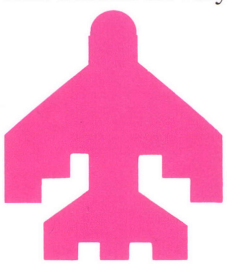
In the male-dominated world of game designing and computer programming, people might be tempted to ask Activision's Carol Shaw, "What's a nice girl like you doing in a job like this?" The answer is, very well. The designer of such hot hits as River Raid *and* Happy Trails, *she's well on the road to becoming a star. She's a graduate of UC Berkeley but math and computers are not her only loves. She's also an avid cyclist riding as much as 4,500 miles a year, often 200 miles at a stretch.*

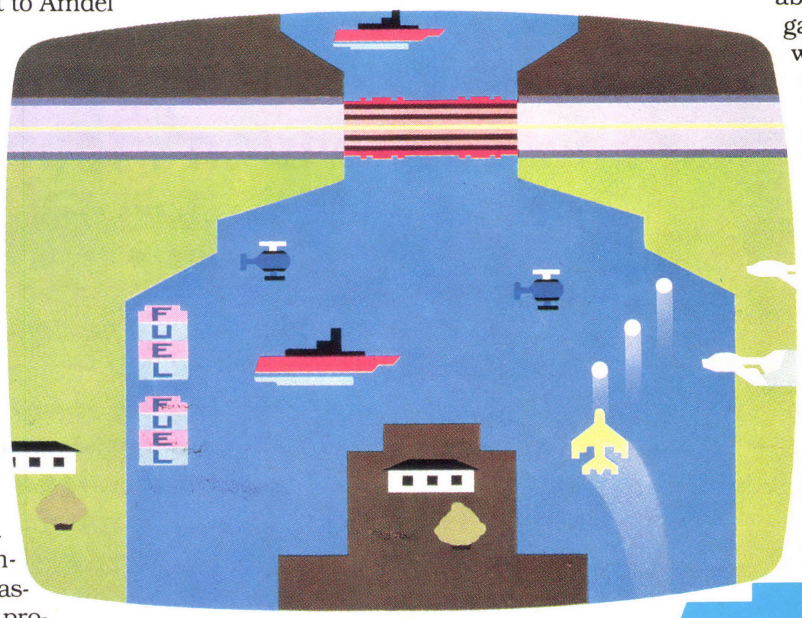
Interviewed by Randi Hacker

EF: How long have you been doing computer programming?

CS: I started in high school. We did BASIC programming in our math classes. In college I started with Fortran and did the first thing you might call a game. You know those little things called Instant Insanity—where you have the four sides of a cube and you have to line up all the colors? We wrote a program like that. That was really fun and that's when I decided to go into computers. I wasn't sure what I was going to do up to that point. I went to school at UC Berkeley. I got a bachelor's degree in electrical engineering and computer science and a masters in computer science.

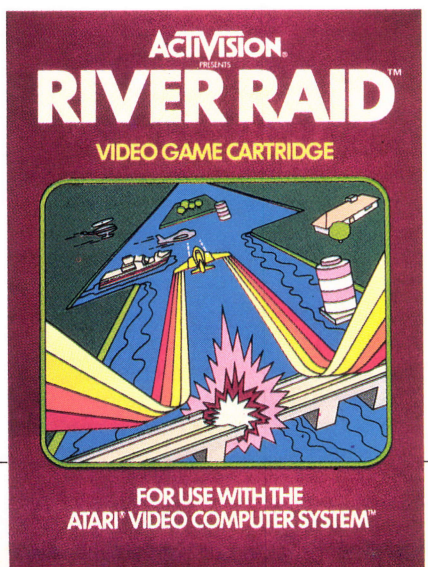
EF: When you first started studying computers, did you go at it with the idea of becoming a game designer?
CS: No, I didn't know what I would do with it. I had a fairly general computer training. I was on a work study program where we worked for six months full time for different companies and then went back to school for six months. It was always hard to get back into school.
EF: Who'd you work for?
CS: First I worked for ESL which does a lot of government projects. The next year I went to Amdel and worked on very large, very fast computers. I was doing assembly language programming on most of these so it was a lot like what I'm doing now on different size machines.

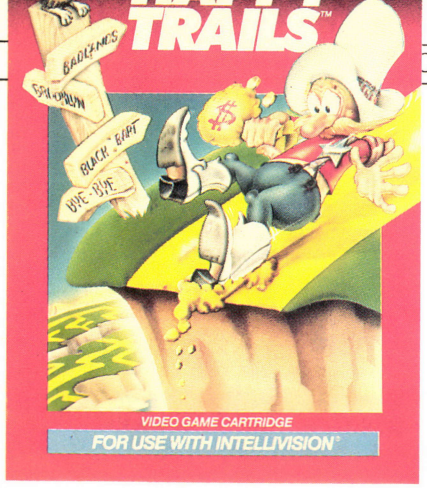




Fly me a river: Carol's first game for Activision was RIVER RAID which became a wild success. She has recently translated it into the 400/800 format.

EF: Did you work for Activision during this time?
CS: Activision wasn't even around then. When I graduated I interviewed at about 20 companies and had seven job offers all over the country. One of them was from Atari and I decided to go there because it looked like a lot of fun—doing games and playing games.
EF: Wasn't that quite a switch—from working with government projects to doing games?
CS: Not really. That's what I was saying. It's the same type of programming—very low level, detailed programming. Game design looked like it would be a lot of fun—each game would be different. And games are short projects—each one takes about six months or whatever and then you go on to the next project—a completely different game like *Happy Trails* or *River Raid*. Also, I couldn't afford to go out and play in the arcades for a quarter a game and here I could do it for free. At that time, writing games was not considered a top profession at all.
EF: That must have been prehistory. What year was it?
CS: This was in 1978 when I finished my degree. Some people thought it sounded like a lot of fun and others said, "It's a complete waste of time. Nothing's going to come of that. It's a dead end job. Where are you going to go with it?"
EF: Boy, were they wrong.
CS: The big thing in those days was to go into management. But designing was one area where you could just do games, not have to work your way up to the presidency and still do quite well financially.
EF: Isn't writing games more gratifying than doing huge government contracts?
CS: For me, I really enjoy it. The public gets to see what you're doing whereas with the government, the classified jobs no one can even hear about. You can talk about games when you're done with them. Once you've finished you can say, "Well, I did *River Raid*," and they've seen it.
EF: You're a star. What games did you do at Atari?
CS: *Checkers* and *3-D Tic Tac Toe*, and those play really well if I do say so myself. We found out that that type of strategy game is not a real top seller. We enjoyed doing them though.
EF: Is working on the 2600 less complex than working on those huge computers you used in school? Is it a lot easier?
CS: Well, it's not easier. The machine itself is fairly simple and that's why it's so hard to get it to do anything. You can learn to program it in a day but to write a good program is tough. You've got to learn to manipulate it to get the most out of it and that's the tough part.
EF: After Atari, did Activision woo you away?
CS: Activision started in 1979 or 1980 and they just had four designers. I didn't think of going over there and, at that point, I don't think they were even looking for more designers. I had a friend at another computer company. He offered me a job with his company





and I went over there and did diagnostic programming which was quite a bit different. I needed a break from doing games. When I got an offer from Activision, I went at game design from a new perspective.

EF: How did you think up your games?

CS: Well, take *River Raid*. There were a lot of scrolling games but no one had really done one on the VCS. So it seemed like a pretty obvious thing to do.

EF: Was it your idea?

CS: It was mostly but we get a lot of feedback from the other designers and they give suggestions—really good suggestions. The game started out with things scrolling down the screen. The things I was able to do on the VCS looked like islands. I said, "This could be a river. You could be going up a river, going around islands like this." So what are we going to have going up the river? We tried different things and I said, "A jet looks really exciting. We can make it is as if you're flying up a canyon," and we went on and kept adding things from there. The idea of flying over the fuel tanks instead of just shooting them was Dave Crane's or Steve Cartwright's idea. Someone else came up with that. Then we added little touches, like how far apart the bridges were. But the basic idea was mine and I did all the programming. You start out with something, you see what you can do from there.

EF: How about HAPPY TRAILS?

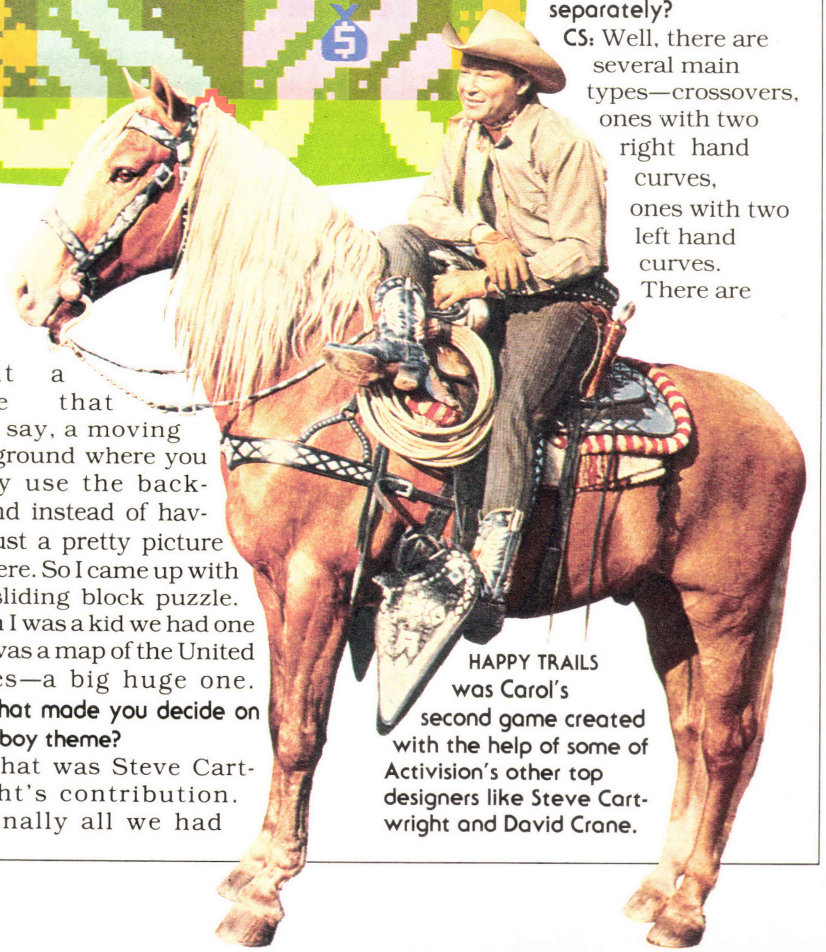
CS: We decided we were going to do games on the Intellivision so I looked at the Intellivision system. It's quite a bit different from the VCS. I tried to isolate its strong points. You can do really detailed backgrounds. It's harder to do a game with millions of little things moving in the foreground. It's really the background that makes the Intellivision game. So I said, how about a game that uses, say, a moving background where you really use the background instead of having just a pretty picture up there. So I came up with this sliding block puzzle. When I was a kid we had one that was a map of the United States—a big huge one.

EF: What made you decide on a cowboy theme?

CS: That was Steve Cartwright's contribution. Originally all we had we're paths. We hadn't really come up with a theme for the game. We were trying different things. We made little bushes. Then Steve came up with the cowboy idea. And he also came up with the name of the game. Usually our editorial department names the games but this time it was Steve. He said, "Why don't we take the song *Happy Trails To You*" and then he said, "That's a great name for the game because you're moving trails around." Everybody contributes. One person does all the programming and spends all the time on it. Others come up with great ideas but you have to make them work.

EF: Did you have to program every single trail separately?

CS: Well, there are several main types—crossovers, ones with two right hand curves, ones with two left hand curves. There are



HAPPY TRAILS was Carol's second game created with the help of some of Activision's other top designers like Steve Cartwright and David Crane.

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about ten types scattered around the screen.

EF: How many games have you written so far?

CS: Three for Activision. *River Raid* for the 2600 and the 800 which I consider a whole new game because it's twice as big. It has 8K instead of 4K and it took quite a bit of work to convert it.

EF: How is it different?

CS: The river is a lot more realistic. It goes back and forth. And the canyon walls are obvious so I was able to better portray the original idea of flying up a canyon. You're also allowed to fly over the brown part which gives you a greater margin of error. In case you fly over the wall, you don't smash up right away. And later on there are tanks that go over the bridges. If you shoot a bridge with a tank on it, you get 250 extra points. On about the fifth bridge the tanks start to shoot at you and you have to avoid explosions if they lob their shots into the canyon walls. Later, the helicopters start to shoot at you, too.

EF: Can you win this game? Is there some place you get to at the end, like Nirvana?

CS: That's the thing about *River Raid.* There is no end. It goes on forever. We call it the River of No Return. Another thing, it's always different. In the original game, you could go up to one million points, and we actually had a few people who succeeded in getting that high score. This time we decided to make it 10 million points. Also the 800 version gets a lot harder than the original one does.

EF: Most of the other game companies are putting out all their games for as many systems as they can. Activision, I know, doesn't do that. How do you decide what system to design a game for?

CS: We try to fill gaps in the company's line. We choose a system and then try to design a game that uses that machine's capabilities. With *River Raid* for the 800, it was a proven game and it was simply a matter of deciding what we wanted to add.

EF: What does the Intellivision do best, and what does the VCS do best? What essentially, are the differences be-

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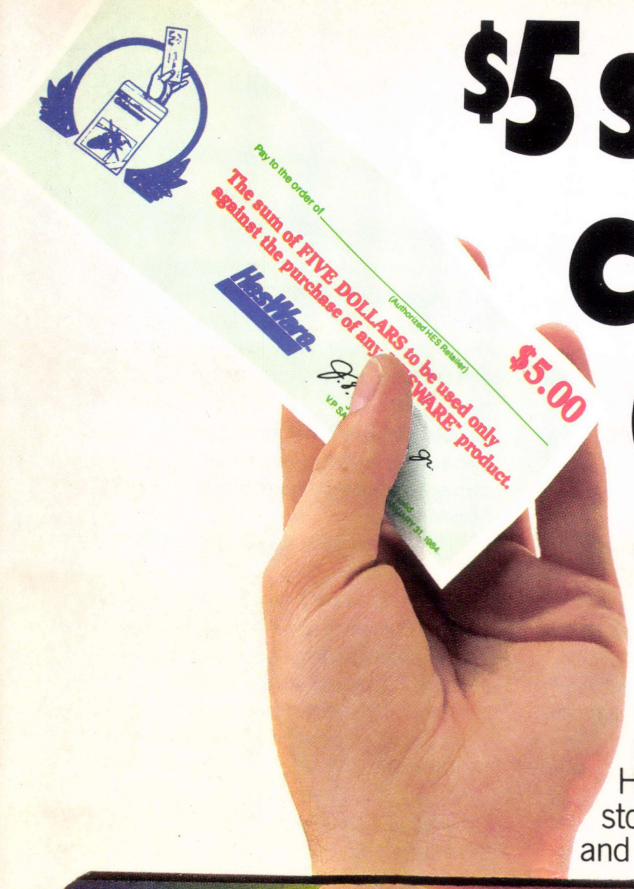

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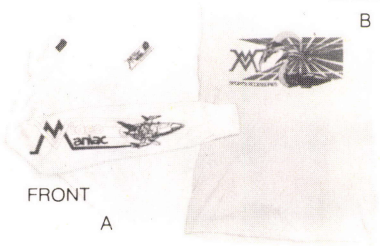

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tween the two systems?

CS: When the Intellivision first came out, the emphasis was on sports games—really elaborate games because you could draw a nice picture of a sports field. The thing about the 2600 is that people have been figuring out how to do a lot more with it. It's a lot more flexible. But the gap is narrowing. The 2600 was designed to be very inexpensive. What you get in the little plastic box is three little chips that don't do very much, but they allow the software that is written complete control over what is displayed. If you're clever, you can figure out how to display a lot of things. We've also graduated to bigger programs. We started out with 2K carts, then doubled the size to 4K and now we're at 8K. Once you get to bigger programs you can do a lot more with them. Intellivision gives you a high resolution background that's pretty easy to program but it doesn't give you the flexibility to go in and do anything else. You're more limited.

EF: What makes the VCS more flexible?

CS: On the 2600, every line in your program is deciding what to display. Intellivision programs aren't like that. You tell the Intellivision what it's going to display and it goes and does it and you can't go in and change something in the middle of the screen as easily. But some of the new people have even figured out how to do that. We have three new games for Intellivision—*Beam-Rider* and *Worm Whomper* and the *Dreadnaught Factor* which are real nice games.

EF: Did people start out with 2K because they thought that that was all those three chips were capable of handling?

CS: It was more a matter of cost. When I was at Atari, a 4K erasable PROM cost $100 when they first came out, and the cost has come way down. When Activision first started, it was doing 2K games while all the others—actually, at that time Atari *was* all the others—were using 4K. Activision felt it would be best to get as much out of 2K as they could before going on.

EF: What are some 2K games from Activision?

CS: All the early ones, *Skiing* and *Kaboom!*—that's a classic and it's only 2K.

EF: What's RIVER RAID?

CS: That's 4K. All our games are at least 4K now and we're coming out with 8K carts. We can still sell the smaller K games for a little bit less without subtracting from the quality of the games.

EF: Is there a limit to the number of K you can use in the cartridge with the Atari hardware? Could you use 16K?

CS: You can make it as big as you want but once you go over 4K you

Continued on page 91

DO'S AND DON'TS

- Break rules. Games that have been big hits have usually been really different. They break all the rules. You can't just keep doing the same old thing and expect it to be a big hit.
- Enjoy playing games. Play a lot of games and learn how to program and try writing your own. Experiment, change things.
- Go to college. Get a degree in computer science but take a broad background of courses—English, psychology. You can get great games out of psychology courses. And, of course, math is important.
- Get a home computer, write a game and send it around. This is probably what is going to happen more and more in the future. If you want to become an author, you sit down, write a book and send it around. It should be the same with games.
- It's very important to get input from other people. At Activision, people within the company play the game and give comments on it. When you're working so closely with a program, you lose sight of how hard it is or how easy it is to understand.
- Don't make it too hard at the beginning. In *River Raid* you can get as far as the first bridge without dying. It starts out really easy but gets gradually harder.
- Of course, there are a lot of successful games which are very hard. So you've got to determine your market first.

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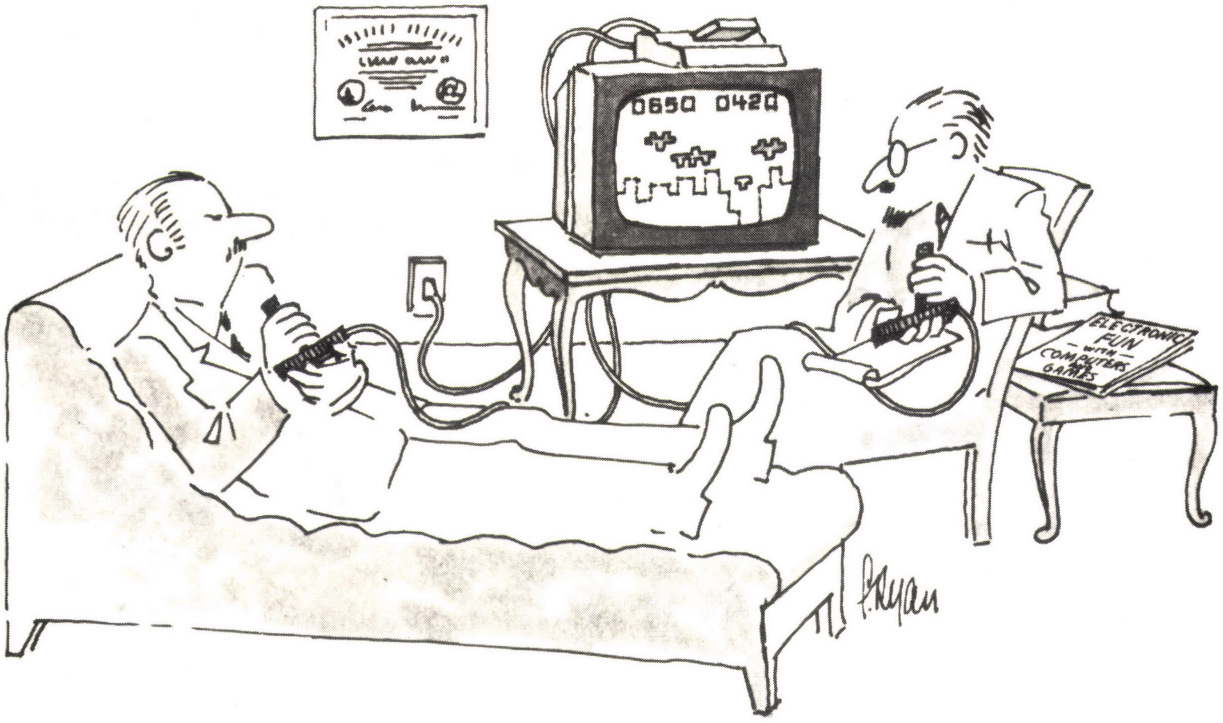

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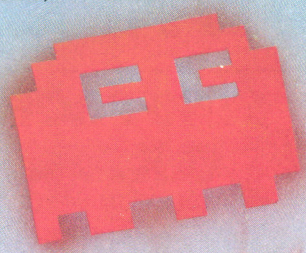
AMERICAN SOFTWARE DESIGN AND DISTRIBUTION has 10 games for the system in the Educational and Arcade categories. Shoot-em-ups include *Laser Shield, Meteor Shower* and *Space Battle 2056.* In the Educational field there's *Mr. Frog* and *Barnyard Fun.* Company's Pick: *Bomb Squad.* Time relentlessly ticks away as you make tests on the bomb's circuits. Using logic, you decide which wires to cut. If you cut the wrong wire or run out of time, the bomb will explode. Cassette or disk. **Price unavailable.** *Address: PO Box 46, Cottage Grove, MN 55016-0046.*

ATARI has eight games for the system in the Arcade category. Among the coin-op style games are *Defender, Dig Dug* and *Centipede.* Company's Pick: *Pac-Man.* The little yellow superstar takes to the TI 99/4A screen in this loyal adaptation of the arcade megahit. Media uncertain. **Price unavailable.** *Address: 1265 Borregas Ave., Sunnyvale, CA 94086.*

BEST SOFTWARE has five games for the system in the Arcade category. Arcade titles include *Blade Runner 2020, Robotron, Star Trek 2* and *Freeways.* Company's Pick: *Froggery.* Take a guess what this one's about. This *Frogger* variation offers 10 skill levels. Cassette only. **$10.** *Address: P.O. Box 22446, Baltimore, MD 21203.*

CREATIVE SOFTWARE has three games for the system in the Arcade category. The fast-action titles include *Astroblitz* and *Trashman.* Company's Pick: *Rat Hotel.* It's not easy being a rat these days, especially when your meals are constantly interrupted by Waldo the Maintenance Man and his atomic elevator. Cartridge only. **$39.95.** *Address: 230 East Caribbean Dr., Sunnyvale, CA 94086.*



COMPUTER-ED has 35 games for the system in the Educational category. Learning games include *Tic-Tac-Toe* (various forms), *Final Consonant Bingo* and *Word Family Bingo.* Company's Pick: *Bull's-eye Division Facts 6-9.* Math problems are presented in an engaging manner when moving graphics are utilized to reinforce division skills. Cassette and disk. **Price unavailable.** *Address: Microcomputers Corp., 34 Maple Ave., PO Box 8, Armonk, NY 10504.*

DECISION-MAKING SYSTEMS LTD. has one game for the system in the Strategy category. Company's Pick: *Crime and Punishment.* It's not an adaptation of the famed novel, but it does allow you to play judge, jury and executioner. You decide on punishments for murderers, robbers and other evil doers, with your judgements compared to actual cases. Cassette only. **$12.50.** *Address: PO Box 9557, Wilmington, DE 19809.*

EDUFUN has eight games for the system in the Educational category. Learning titles include *Snake-O-Nyms/Word Flip, Sky Writer/Pop 'R Spell, Golf Classic & Compubar* and *Frenzy/Flip Flop.* Company Pick: *Gulp!! & Arrow Graphics.* The better your mathematical skills, the greater your chances of surviving the onslaught of a mammoth fish in *Gulp!!*, while a good sense of direction will help you conquer *Arrow Graphics.* Cartridge only. **$39.95.** *Milliken Publishing Company, 1100 Research Blvd., St. Louis, MO 63132.*

EXTENDED SOFTWARE COMPANY has a dozen games for the system in the Arcade and Strategy categories. Arcade titles include *Kong, Bouncer* and *Artillery.* In the Strategy area there's *Baseball, Extended Hangman* and *Tic-Tac-Toe.* Company's Pick: *Romeo.* The love-sick hero must traverse the blazing desert dunes, swim a stream infested with alligators and sharks, and bolt through treacherous terrain for his reward. Cassette or disk. Requires Extended Basic

GAMER'S GUIDE

Module. **$15.** *Address: 11987 Cedarcreed Dr., Cincinnati, OH 45240.*

FFF SOFTWARE has two games in the Arcade category for the system. Coin-op titles include *TI-Asteroids* and the Company's Pick: *Shuttle Command*. The Space Shuttle must down Russian nuclear warheads before they explode in this first person game. Cassette or disk. **$10.** *Address: PO Box 4169, Trenton, NJ 08610.*

FUNWARE has seven games for the system in the Arcade category. Coin-op style games include *Henhouse, Video Vegas, Rabbit Trail* and *Ant Colony*. Company's Pick: *Galactic Barrier*. Defend the last space frontier as you maneuver to avoid alien attackers whose numbers multiply as you destroy their scouts. Cartridge only. **$39.95.** *Address: 405 N. Bowser, Bldg. A, Richardson, Texas 75081.*

FUTURA SOFTWARE has 30 games for the system in the Arcade, Strategy and Adventure categories. Strategy titles include: *Galactic War, All-Star Baseball* and *All-Star Bowling*. In the Adventure area there's *C.I.A. Adventure, Doomcastle* and *Dragon Game*. The Arcade titles include *Death Station, SAM Defense* and *Chutes and Sharks*. Company's Pick: *Fly Snuffer*. There are more than just flies in the room as you battle the buzzing hordes with cans of bug spray. Cassette only. **$19.95.** *Address: Ehninger Associates, Inc., PO Box 5581, Fort Worth, TX 76108.*

IMAGE COMPUTER PRODUCTS has six games in the Strategy category for the system. The titles include *Wall Street Challenge, Mind Masters* and *Strategy Pack I*. Company's Pick: *Wildcatting*. Using a geological survey, players must select a location on the map with the greatest possibility of containing oil. You must hit black gold before you go broke. Cassette only. **$14.95.** *Address: 1313 West Randolph, Chicago, IL 60607.*

IMAGIC will have seven games in the Arcade category for the system within one year. Arcade titles will include *Fathom, Flap!* and *Microsurgeon*. Company's Pick: *Demon Attack*. The breakthrough alien assault game comes to the TI screen in this loyal translation complete with voice synthesis. Cartridge only. **Price unavailable.** *Address: 981 University Ave., Los Gatos, CA 95030.*

INTERNATIONAL 99/4 USERS GROUP, INC. has over 100 games for the system in the Arcade, Strategy and Educational categories. In the Strategy line there's *Civil War, Presidents, Tic Tac Toe* and *Capture*. The Educational area has *Bowling Math, Number Guess, English Tennis*, and *States Quiz*. Coin-op style games include *Space War, Space Duel, Cat and Mouse, Asteroid, Space Venture* and *Egg Wars*. Company's Pick: *Lunar Lander*. Get ready for the Space Shuttle as you pilot a lunar vehicle for a jaunt about the moon. Cassette or disk. **Price unavailable.** *Address: PO Box 67, Bethany, OK 73008.*

MILTON BRADLEY has 10 games for the system in the Arcade and Educational categories. Arcade titles include *Championship Baseball, Meteor Belt, Big Foot* and *Sewermania*. In the learning area there's *Honey Hunt, I'm Hiding* and *South Track Trolley*. Company's Pick: *Space Bandit*. Players must snatch up space crystals in a 3-D maze as deadly droid guards are in hot pursuit. Special effects include a wrap-

Illustration: Ann Neuman

around shooting action and a shield that must be raised to protect players from being hurled into space. Cartridge requires MBX Expansion System ($59.95), **$49.95.** *Address: 111 Maple St., Springfield, MA 01103.*

MOONBEAM SOFTWARE has seven games for the system in the Arcade category. Among the coin-op style titles are *Moonbeam Express, Death Drones, Moonvasion* and *Garbage Belly.* Company's Pick: *Astromania.* Pilot your fleet of photon-powered ships through the asteroid cannons of Sulconon, the aerial attack squad of Caustress, the meteor belt of Trisod! Then face the unforgiving Zircon Droids! Cassette or disk. **$19.95.** *Address: 2 Bridge St., Northampton, MA 01060.*

NOT-POLYOPTICS has 17 games for the Texas Instruments computer. They fall into three main categories: Arcade games, Simulation games and Strategy games. In the Simulation area there's *Winging It.* Titles in the Arcade area include *Waldoball, Tickworld* and *Maze of Ariel.* Standouts in the Strategy area are *Arcade Monopoly, Addvance* and *Crosses.* Company's Pick: *Laser Tank.* On a battlefield of the future, maneuver your Coherent Infrared Equipped Vehicle (CIREV for short) into position for the lightning quick laser duels with similarly equipped enemy tanks. Available in cassette only. **$15.** *Address: 13721 Lynn St., Suite 15, Woodbridge, VA 22191.*

99'ER SOFTWARE has 10 games for the system in the Arcade category. Among the fast-action titles are *Snake 'N' Eggs, Archeodroid, Fleet Command* and *Grubstake.* Company's Pick: *Blockade Runner.* Sea battle is played out in front of a radar screen, giving would-be captains the only information as to where their adversaries are. Cassette only. **$9.95.** *Address: 1500 Valley River Drive, Eugene, OR 97401.*

PDI has one game for the system in the Strategy category which is the Company's Pick: *Code Breaker.* Break the computer's code and figure out its messages. Start out by decoding scrambled letters, go on to tougher codes in which both letter and word order have been scrambled and end by decoding "master challenge" messages. Cassette only. **$18.95.** *Address: 95 East Putnam Ave., Greenwich, CT 06830.*

PEWTERWARE has five games for the system in the Strategy category. Among the titles are *Challenge Poker, Decathlon, Up Periscope* and *Bluegrass Sweepstakes.* Company's Pick: *Match Wits.* Concentration game has players take turns trying to match pairs of colored pictures. Cassette only. **$10.** *Address: PO Box 503, Gulf Breeze, FL 32561.*

PROMETHEUS SOFTWARE has 10 games for the system in the Arcade and Strategy Categories. Arcade titles include *War of the Worms, Asteroid Miner* and *Helicopter Attack.* In the Strategy area there's *Checkers, Reversi, Cribbage* and *Wari.* Company's Pick: *Froglegs.* Hop on that lily pad, or else you'll be run over by a truck. Cassette or disk. **Price unavailable.** *Address: 413 Lowell Lane, Richardson, TX 75080.*

REPUBLIC SOFTWARE has two games for the system in the Arcade category. *Ring Destroyer* was the company's first game which was followed by the Company's Pick: *Interceptor.* Aerial combat game pits your high-flying jet against an equally skillful and deadly flier. Cassette or disk. **$19.95.** *Address: PO Box 23042, L'Enfrant Plaza, Washington, D.C. 20024.*

ROMOX has five games for the system in the Arcade category. Arcade-style titles include *Ant Eater, Hen Pecked* and *Whiz Kid.* Company's Pick: *Princess and the Frog.* As an enchanted Frog, you have one minute to run a gauntlet of jousting knights, alligators and snakes in order to unite with your princess. Cartridge only. **$39.95.** *Address: 501 Vandell Way, Campbell, CA 95008.*

SCHOLASTIC WIZWARE has three games for the system in the Educational category. Titles include *Electronic Party* and *Square Pairs.* Company's Pick: *Turtle Tracks.* Learn to program your own games by using simple commands and patterns. Cassette only. **$29.95.** *Address: 730 Broadway, New York, NY 10003.*

SCOTT FORESMAN has four games for the system in the Educational category. Learning titles include *Frog Jump/Picture Parts, Mathematic Action Games* and *Pyramid Puzzler/Star Maze.* Company's Pick: *Number Bowling/Space Journey.* Decipher decimals and fractions along with percentages while knocking down the numbers and travelling through the void of space. Cartridge only. **$39.95.** *Address: 1900 East Lake Ave., Glenview, IL 60025.*

SUNRISE SOFTWARE has one game for the system in the Simulation category. Company's Pick: *Spin-A-Fortune.* Unlike typical flight or war simulations, this one simulates a game show environment. Spin the money wheel, guess letters and solve the puzzles for big payoffs, all without being embarrassed on TV. Cassette only. **$12.95.** *Address: PO Box 5010, Springfield, VA 22150.*

TEXAS INSTRUMENTS has 49 games for the system in the Arcade, Educational and Adventure categories. Among the fast-action titles are *TI-Trek, The Attack, Blasto* and *ZeroZap.* In the Educational area there's *Demolition Division, Meteor Multiplication* and *Dragon Mix.* Adventure titles include *Tunnels of Doom, Adventureland, Mission Impossible* and *Ghost Town.* Company's Pick: *Parsec.* Players battle alien ships on a planet in outer space. Aliens attack in waves of different battle ships as players guide their craft through the attacks, refueling tunnels and asteroid belts. Designed for use with the company's speech synthesizer. Cartridge only. **$39.95.** *Address: Consumer Relations, PO Box 53, Lubbock, TX 79408.*

THORN EMI has three games for the system in the Arcade category. Among the titles are *Submarine Commander* and *River Rescue.* Company's Pick: *War Games.* Save the world from nuclear holocaust. Inspired by the current theatrical movie, it's up to you to break the code of an errant computer before the USSR retaliates with a first strike. Cartridge only. **$39.95.** *Address: 1370 Avenue of the Americas, New York, NY 10019.*

TWENTIETH CENTURY FOX GAMES plans to introduce several programs for the system but currently has one game for the TI 99/4A and that is *M*A*S*H,* the Company's Pick. You are Hawkeye and you've got to scour the Korean countryside picking up wounded soldiers and bringing them back to the hospital where, in the second screen, you get to scrub and perform video surgery—removing pieces of shrapnel which float casually through the bloodstream of a GI. **About $35.** *Address: 4701 Patrick Henry Drive, Building 9, Santa Clara, CA 95050.*

FIRST SCREENING

3-D TUNNELS OF TERROR

We're waiting to discover you. Send us a program you've written and maybe we'll publish it in First Screening *and send you $100. Include a printout, a disk or cassette and your picture, along with a description of the game. Be sure to let us know which computer it's for.*

This month's winner is Steve Bender, a senior at Penn Cambria High School in Ebensburg, PA. He wrote 3-D Tunnels of Terror *in Applesoft BASIC on his school's 48K Apple II+. Steve's been programming for four or five years and wants to become a game designer.*

The Game

3-D Tunnels of Terror puts you in a maze to gobble up boxes of food and to avoid four deadly ghosts that are pursuing you. Sound familiar? In this game, though, you're not looking down on the maze, but in it. All you can see is one visible hallway at a time. The visible hallways have a viewing limit of five units. To see more of the maze, use the two arrow keys to "rotate" yourself 90 degrees to the left or right, corresponding to the arrows on the keys. To advance forward and explore the maze, simply depress the space bar. If you advance forward and land on a box of food, that box will disappear and you score.

Steve Bender, author of 3-D TUNNELS OF TERROR.

The scoring for *3-D Tunnels of Terror* is one point for each box of food eaten, and 56 bonus points for each maze cleared. You are probably wondering about the odd number of bonus points. Well, the answer is simple, there are 94 points possible for eating all of the boxes of food in each maze. When

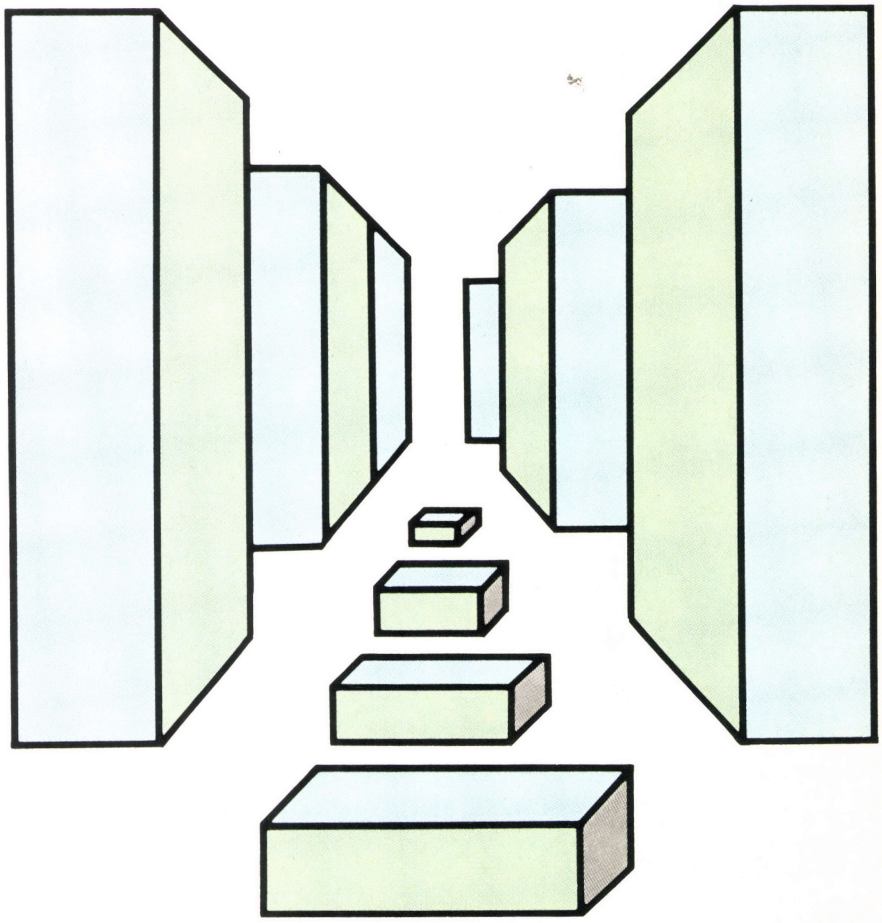
you add the 56 bonus points to the 94 previous points, you come out with an even 150 points (which, by the way, is the grand sum for each maze cleared before a new, filled maze appears). The TIME, MAZE you are clearing, SCORE and HISCORE are displayed on the screen at all times. When a new game is played, everything is reset except the HISCORE.

Elements

The four ghosts in this game are indestructable and move independently within the maze. They only move when your TIME reaches 0 or you advance forward, not when you are turning.

The TIME is a counter that runs from 50 to 0, decrementing by one when you are rotating, or just standing still. It will reset to 50 again when the ghosts move, or you advance forward in any direction.

3-D Tunnels of Terror does offer some features to your benefit. The 10 by 11 unit maze even comes equipped with escape routes, but the escape routes are disguised as dead ends and do not contain any boxes of food. The most helpful clues are the purple passages. The maze is always blue, but if a ghost is just around a corner of any visible hallway, that corner will glow purple. This does not necessarily mean that a ghost is coming out on its next move. That ghost could have just entered the purple passage. The game ends when you



come in contact with any ghost. It will also end if you face any wall and run into it. I made the walls electrified as an extra touch to the game.

Hints

Here are a couple tips: Sketch the maze out on paper. You will notice that the maze is familiar. Any ghost could sneak up behind you without detection and destroy you. So once in a while, quickly rotate 360 degrees to check your surroundings.

If you do not happen to own a color monitor and would like to play *3-D Tunnels of Terror*, change each HCOLOR = 6 to HCOLOR = 3 in lines 630-660. This will make the maze white with dim passages as warning signals. □

```
 10 CLEAR: HOME : VTAB (12):
    PRINT "(((((((( 3-D TUNNELS
    OF TERROR ))))))))": GOSUB 1000
 20 HOME : GOSUB 700:
    GOTO 600
100 P = PEEK ( - 16368): IF TL = 1
    THEN TT = T
105 TL = 0: FOR T = TT TO 0 STEP - 1
110 IF PEEK ( - 16384) = 160 THEN
    GOTO 120
115 GOTO 170
120 IF MID$ (M$(PL),PD,1) = "1"
    THEN GOTO 900
124 VTAB (24): HTAB (34):
    PRINT "50";
125 IF PD = 1 THEN PX = PX - 1
130 IF PD = 2 THEN PY = PY - 1
135 IF PD = 3 THEN PX = PX + 1
140 IF PD = 4 THEN PY = PY + 1
145 PL = PL + D(PD)
150 IF PL = 50 THEN PL = 58: PX = 8
155 IF PL = 59 THEN PL = 51: PX = 1
160 IF RIGHT$ (M$(PL),1) = "1"
    THEN GOSUB 700
166 TL = 0 : TT = 50 : GOTO 200
170 IF PEEK ( - 16384) = 149
```

```
     THEN TL = 1:PD = PD + 1:
     GOTO 180
 175 GOTO 185
 180 IF PD = 5 THEN PD = 1
 184 GOTO 600
 185 IF PEEK ( - 16384) = 136
     THEN TL = 1:PD = PD - 1:
     GOTO 195
 190 VTAB (24): HTAB (34): PRINT
     T;" ";: NEXT T: TT = 50
 192 GOTO 200
 195 IF PD = 0 THEN PD = 4
 196 GOTO 600
 200 FOR K = 1 TO 4
 205 IF GL(K) = PL THEN HGR :
     GOTO 905
 210 GY = INT (GL(K) / 10):GX
     = GL(K) - (GY * 10)
 215 IF FY = GY AND FX < GX
     AND LEFT$ (M$(GL(K)),1) =
     "0" THEN GD(K) = 1:
     GOTO 250
 220 IF FY = GY AND FX > GX
     AND MID$ (M$(GL(K)),3,1) =
     "0" THEN GD(K) = 3:
     GOTO 250
 225 IF FX = GX AND FY < GY
     AND MID$ (M$(GL(K)),2,1) =
     "0" THEN GD(K) = 2: GOTO 250
 230 IF FX = GX AND FY > GY
     AND MID$ (M$(GL(K)),4,1) =
     "0" THEN GD(K) = 4: GOTO 250
 235 R = INT ( RND (1) * 4) + 1
 240 IF MID$ (M$(GL(K)),R,1) = "0"
     AND GD(K) + 2 < > R AND
     GD(K) - 2 < > R THEN GD(K)
     = R: GOTO 250
 245 GOTO 235
 250 GL(K) = GL(K) + D(GD(K))
 255 IF GL(K) = 50 THEN GL(K) = 58
 260 IF GL(K) = 59 THEN GL(K) = 51
 265 IF GL(K) = PL THEN HGR :
     GOTO 905
 270 NEXT K
 600 HGR : FOR L = 0 TO 5
 610 M = PL + (L * D(PD)):N$ = M$(M)
 615 IF PD = 3 THEN N$ = MID$
     (N$,2,3) + LEFT$ (N$,1) +
     RIGHT$ (N$,1)
 620 IF PD = 4 THEN N$ = MID$
     (N$,3,2) + LEFT$ (N$,2) +
     RIGHT$ (N$,1)
 625 IF PD = 1 THEN N$ = MID$
     (N$,4,1) + LEFT$ (N$,3) +
     RIGHT$ (N$,1)
 630 HCOLOR= 6: FOR K = 1 TO 4:
     IF LEFT$ (N$,1) = "0" AND M
     + D(PD - 1) = GL(K) THEN
     HCOLOR = 2
 635 NEXT K: IF LEFT$ (N$,1) =
     "0" THEN GOSUB 805: GOTO 645
 640 HCOLOR= 6: GOSUB 800
 645 HCOLOR= 6: FOR K = 1 TO 4: IF
     MID$ (N$,3,1) = "0" AND M +
     D(PD + 1) = GL(K) THEN
     HCOLOR= 2
 650 NEXT K: IF MID$ (N$,3,1) =
     "0" THEN GOSUB 820: GOTO 660
 655 HCOLOR= 6: GOSUB 815
 660 HCOLOR= 6: IF MID$ (N$,2,1)
     = "1" THEN GOSUB 830:
     GOSUB 670: GOTO 100
 665 GOSUB 670: NEXT L: GOTO 100
 670 IF L > 0 AND RIGHT$ (N$,1) =
     "1" THEN HCOLOR= 3:
     GOSUB 840
 675 HCOLOR= 5: FOR K = 1 TO 4:
     IF L > 0 AND GL(K) = M THEN
     GOSUB 850
 685 NEXT K: RETURN
 700 M$(PL) = LEFT$ (M$(PL),4) + "0"
 705 BN = BN + 1: IF BN = 94
     THEN GOSUB 1150:MN = MN +
     1:S = S + 56
 710 S = S + 1: IF S > 99999 THEN S
     = 0
 715 IF S > HS THEN HS = S
 720 IF MN > 99999 THEN MN = 0:
     HOME
 725 GOSUB 750: RETURN
 750 VTAB (21): HTAB (5):
     PRINT "*** 3-D TUNNELS
     OF TERROR ***"
 755 PRINT TAB( 3);"WRITTEN BY
     STEVE BENDER 06/07/83"
 760 VTAB (23): PRINT
     "SCORE:";S;" TAB( 26);
     "HISCORE:";HS
 765 PRINT "MAZE#:";MN;
     TAB( 29);"TIME:50";
 770 RETURN
 800 HPLOT W(L),W(L + 14) TO W(L
     + 1),W(L + 15) TO W(L +
     1),W(L + 22) TO W(L),W(L +
     21): RETURN
 805 HPLOT W(L),W(L + 15) TO W(L
     + 1),W(L + 15) TO W(L +
     1),W(L + 22) TO W(L),W(L + 22)
 810 HPLOT W(L),W(L + 15) + 1 TO
     W(L + 1),W(L + 15) + 1:
     HPLOT W(L),W(L + 22) - 1 TO
     W(L + 1),W(L + 22) - 1:
     RETURN
 815 HPLOT W(L + 7),W(L + 14) TO
     W(L + 8),W(L + 15) TO W(L +
     8),W(L + 22) TO W(L + 7),W(L
     + 21): RETURN
 820 HPLOT W(L + 7),W(L + 15) TO
     W(L + 8),W(L + 15) TO W(L +
     8),W(L + 22) TO W(L + 7),W(L + 22)
 825 HPLOT W(L + 7),W(L + 15) + 1
     TO W(L + 8),W(L + 15) + 1:
     HPLOT W(L + 7),W(L + 22) - 1
     TO W(L + 8),W(L + 22) - 1:
```

```
      RETURN
830   HPLOT W(L + 1),W(L + 15) TO
      W(L + 8),W(L + 15): HPLOT
      W(L + 1),W(L + 22) TO W(L +
      8),W(L + 22)
835   HPLOT W(L + 1),W(L + 15) + 1
      TO W(L + 8),W(L + 15) + 1:
      HPLOT W(L + 1),W(L + 22) - 1
      TO W(L + 8),W(L + 22) - 1:
      RETURN
840   HPLOT B(L),B(L + 30) TO
      B(L),B(L + 20) TO B(L +
      10),B(L + 20) TO B(L + 10),B(L
      + 30) TO B(L),B(L + 30) TO B(L
      + 5),B(L + 35) TO B(L +
      15),B(L + 35) TO B(L + 15),B(L
      + 25) TO B(L + 10),B(L + 20)
845   HPLOT B(L + 10),B(L + 30) TO
      B(L + 15),B(L + 35): RETURN
850   HPLOT G(L),G(L + 35) TO G(L +
      5),G(L + 40) TO G(L + 15),G(L +
      40) TO G(L + 20),G(L + 35) TO
      G(L + 20),G(L + 25) TO G(L +
      15),G(L + 30) TO G(L + 10),G(L
      + 25) TO G(L + 5),G(L + 30) TO
      G(L),G(L + 25) TO G(L),G(L + 35):
      RETURN
900   GOSUB 920: PRINT "YOU RAN
      INTO A DEADLY ELECTRIFIED
      WALL.": GOTO 910
905   GOSUB 920: PRINT " YOU ARE
      A VICTIM OF A DEADLY GHOST."
910   PRINT TAB( 4);"PRESS ANY KEY
      TO BEGIN NEW GAME.";: GET A$
915   GOSUB 1130: GOTO 20
920   TEXT : VTAB (12): HTAB (15):
      FLASH : PRINT "GAME
      OVER": NORMAL : P =  PEEK
      ( - 16368): RETURN
1000  DIM G(45),B(40),W(28),
      M$(110):D(0) = 10:D(1) =
      -1:D(2) = - 10:D(3) = 1:D(4) =
      10:D(5) = - 1
1030  DATA 64,68,92, 108, 120, 128,
      134,215,210,186,170,158,
      150,144,0,4,28,44,56,64,70,
      159,155,131,115,103,95,88
1040  FOR L = 0 TO 27: READ W(L):
      NEXT L
1050  DATA 108,120,128,134,136,
      116,126,132,138,138, 161,152,
      146,142,140,170,158,150,
      144,142,155,131,115,103,
      95,147,125,111,101,94,142,
      123,109,100,93,134,118,
      106,98,92
1060  FOR L = 1 TO 40: READ B(L):
      NEXT L
1070  DATA 81,101,115,125,131,
      109,121,129,131,135,139,
      139,139,139,139,169,157,149,
      147,141,197,177,163,153,
      147,142,122,108,98,92,131,
      115,103,95,90,28,44,56,64,
      70,4,28,44,56,64
1080  FOR L = 1 TO 45: READ G(L):
      NEXT L
1090  DATA 1100,0101,0100,0101,0110
      1100,0101,0100,0101,0110,
      1010,1111,1010,1111,1010,1010,
      1111,1010,1111,1010,1000,
      0101,0000,0100,0001,0001,0100,
      0000,0101,0010,1001,0101,
      0010,1001,0110,1100,0011,
      1000,0101,0011
1100  DATA 0101,0111,1010,1100,0001,
      0001,0110,1010,1101,0101,1101,
      0101,0000,0010,1011,1011,
      1000,0000,0101,0111,0101,
      0111,1010,1000,0101,0101,
      0010,1010,1101,0101
1110  DATA 1100,0101,0010,1001,0110,
      1100,0011,1000,0101,0110,
      1001,0110,1000,0100,0001,
      0001,0100,0010,1100,0011,
      1100,0001,0011,1001,0110,
      1100,0011,1001,0001,0110,
      1001,0101,0101,0101,0001,
      0001,0101,0101,0101,0011
1120  FOR L = 0 TO 109: READ
      M$(L): NEXT L
1130  PX = 4: PY = 9: PL = 84: PD = 3:
      TT = 50: L = 0: TL = 0: MN = 1: K
      = 0: S = 0
1140  GL(1) = 54:GL(2) = 54:GL(3)
      = 55:GL(4) = 55:GD(1) =
      2:GD(2) = 2:GD(3) = 2:GD(4) = 2
1150  FOR L = 0 TO 109:M$(L) =
      LEFT$ (M$(L),4) + "1": NEXT L
1160  M$(50) = "11010":M$(59) =
      "01110": RETURN
```

In order for us to consider your entry, we need the following items: a complete computer program, a brief game description, photographs or drawings of the graphics, a picture of you and a self-addressed, stamped envelope. Send it all to: First Screening, Electronic Fun, *350 East 81st St., New York, NY 10028. Include your phone number so we can reach you.*

GAMEMAKERS

Continued from page 82

have to have a special chip to use it.

EF: In the hardware or in the software?

CS: In the cartridge. *Robot Tank* and *Decathlon* are 8K so we had someone design a special chip.

EF: What does this special chip do?

CS: It switches things. Basically, you can only use 4K at a time. So the chip lets you use one 4K block then switch to the second 4K block. It goes back and forth.

EF: What games do you like?

CS: I really like *Stampede*. When I first came to Activision I just had to get into the club.

EF: So you play games?

CS: Well, we have to play the new games.

EF: I know, but do you go home and play games?

CS: I do play games but usually when I go home in the evening, I don't want to play games. After all, I play them all day. I cook dinner instead.

EF: You don't work normal hours, do you? You can come and go as you please.

CS: Activision's pretty flexible. The design center is open 24 hours a day, but I try to be fairly steady. We have one person who works late at night. It's good to come in during the day to get feedback from other designers but we have passes so we can get in any time.

EF: Were your parents among the people who said, "What are you going into games for? Is that anything for an adult to do?"

CS: No. They were the ones who played games with us when we were kids.

EF: Does anybody else in your family work with computers?

CS: My older brother works for Electronic Arts.

EF: This is a question that I feel obligated to ask, because I once met Gloria Steinem. There aren't that many women in game designing. Does that make you feel strange or out of place?

CS: Not really. I'm used to it. A lot of my engineering classes didn't have that many women. When I took a civil engineering class there were two women in surveying. The instructor had never taught any women at all before the previous semester, and so he had a hard time.

EF: When you were in college there were very few women in engineering, right?

CS: There were women in programming classes but once you got into electrical engineering or surveying or civil engineering there weren't very many women. But I got used to it early. When I was in high school, I was always in the top math classes and I went to a lot of math contests and won awards and people were always making this big

deal over me because I was a girl. It's unfortunate. There's this double standard. I didn't start thinking about this until later and then I realized there was always this very subtle discrimination when I was going through the math contests. The people I work with haven't given me any trouble except once. It's a great story: At one of my previous jobs, one of the executives said to me when I was hired, "Oh great! At last we've got a woman game designer and she can do interior decorating games and cosmetic color matching." A lot of people think that a woman game designer is going to do something different than a man. That's silly.

EF: But I always hear comments like "Imagine that. A woman thought of RIVER RAID. It's sort of a strange game for a woman to think of."

CS: The thing is there's no such thing as a typical woman who's going to bring some woman's point of view into the profession. There are typical programmers. I took one of those personality profiles in high school which indicates what vocation you're going to adopt. I never paid any attention to it but then years later I found out I was in the 97th percentile for programming. I also found out I had taken the test for men and it turns out that men programmers and women programmers are very similar in their personalities.

EF: You said you were excellent at math. Do you think that it's absolutely necessary to excel in math to become a game designer?

CS: It helps but I think you're going to see a lot of room for people who are talented artists because graphics are getting a lot more complex. There's also room for Renaissance people who can do anything—people who are good at math, art, music—people who can do a whole game from beginning to end by themselves. Dave Crane's the classic example of that type. There will also be teams of people who are specialists—specialists in graphics, in game play and so on and then it will all be put together.

EF: Is knowing programming a must?

CS: Knowing something about programming is becoming essential in everything not just for those who want a career in game designing. And the competition in the field is getting progressively tougher so knowing something about programming will definitely give you an edge. Even so, not everybody will get to be a millionaire.

Those of us who went into programming years ago, went into it because we loved it not because we wanted to be millionaires. There weren't very many of us. We didn't go into it for the money. There *was* no money. We did it because it was fun. Then it turned out that you could make quite a bit of money in it.

EF: What else, besides knowing how to program, is essential?
CS: Well, you have to come up with hit games. Some people will never come up with a hit game no matter how much they know about computers. You can be a really good programmer and not come up with games. But certainly knowing programming is important at this stage and in the future. You're going to have people programming forever. One point I'd like to make is that if all you're interested in is the money, don't go into it because you probably won't make a lot of money. It's the people that go into it because they really like it and enjoy it who will be able to write successful games. And they'll have the best chance of becoming rich. One thing about going to college and studying programming is that if you go into games but aren't successful, you can always do something else.
EF: Everone and their uncle thinks they can write a game. They look at existing games and think they can do it better or do it differently.
CS: Then they should sit down and try to write a game. Start in BASIC with an Atari home computer and they'll discover first why all games that are sold are written in assembler language. Once you learn assembler language you'll find it's easier to generate a display.
EF: How many computer languages do you know?
CS: One thing about professional programmers is that they know millions of languages and they can just pick up another one very easily. Once you know the basic structures, you find similar structures in all the languages.
EF: Do you have a computer at home?
CS: An Atari 800. And we have a direct line from home to the office so I can use my terminal. We don't have that much use for home computers though. We're used to working with really powerful computers. In the office we use a DEC computer. That's where we do our editing.
EF: Do you want to do this forever?
CS: I'll probably continue to do it at least part time. I wouldn't want to retire completely.□

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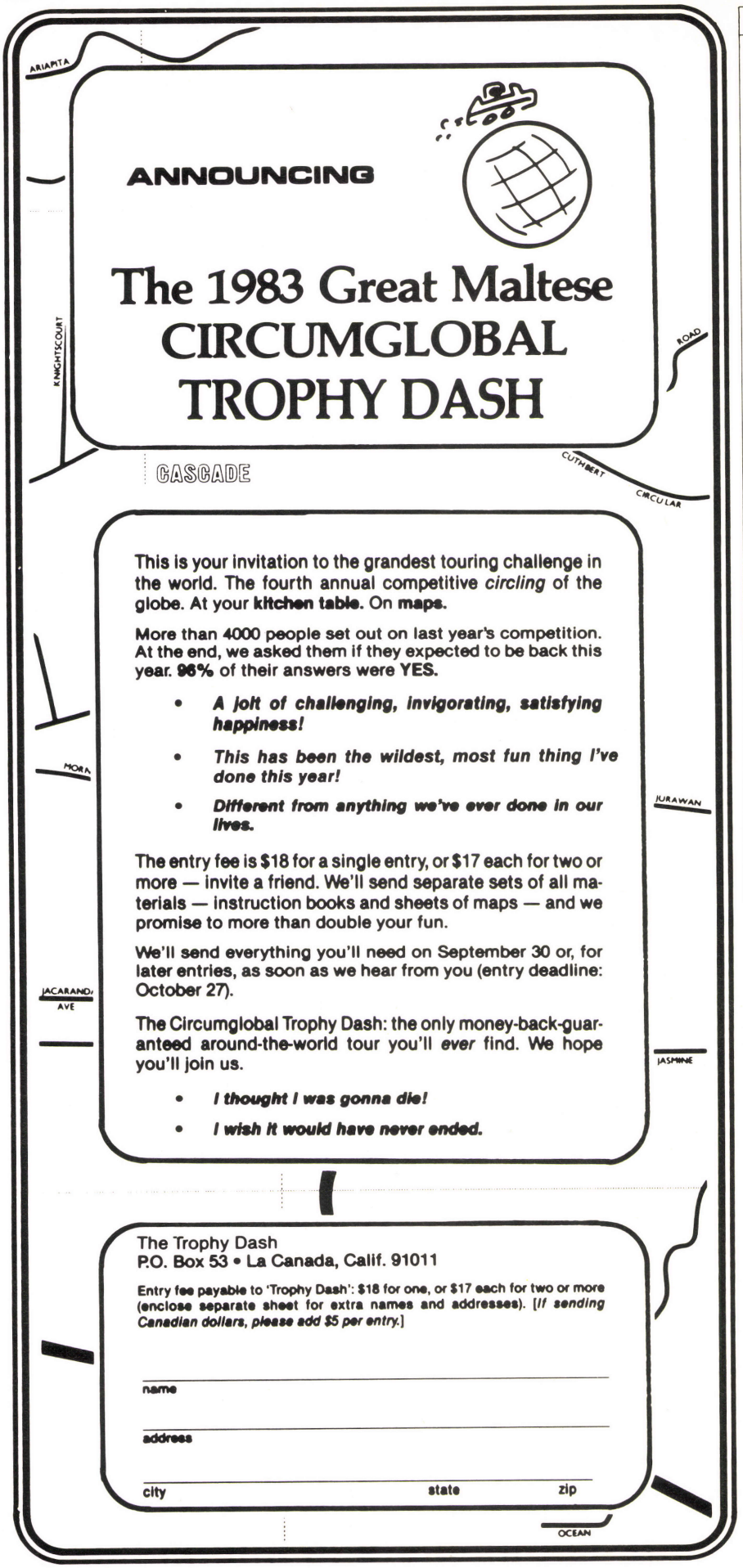

BUBBLES

Continued from page 20

must avoid the drain. But when it flashes green, that's your cue to jump in. If you reach the opening unscathed, the round will end and you'll receive bonus points on the basis of how portly the Bubble has become. If you sop up every last crumb, ant and grease spot, though, you'll forfeit the bonus and also lose a game life when the faucet comes on. As soon as you get the green light, start making your way to the drain. Even if you have overlooked an ant or two, you'll notice that they will start walking back to the drain on their own accord. If they crawl inside before you do the round is over and like the ants, your bonus and a game life will go down the drain.

Keep in mind that as you absorb dirt and bugs, your bubble will grow, making you a larger target for the razors, roaches and brushes. As your mass increases keep to the outer edges of the sink. Your enemies, thank goodness, tend to congregate near the drain. □

BAGMAN

Continued from page 21

your tail. If you have no bags in the vicinity of the wheelbarrow you can't very well afford to drop the one you are holding on the cops. If you do you'll be rid of them temporarily—and you'll also have to go back and get another bag. If you don't drop the bag you can buy more time for yourself—but then the cops are breathing right down your neck. By keeping bags in reserve on the surface you insure not only a high score, but a longer game as well.

In regard to dropping money bags on the cops as a means of halting their pursuit: This works but there are easier ways to keep the cops at bay that don't involve dropping sacks. The cops are scared to death of the pickax. Anytime you pick it up they run. This tool's effectiveness diminishes quickly so make sure you have a place to run when it disappears. If you choose to strike a cop down be careful where you do it. Remember: They fall but they don't disappear. His body could very well lie between you and your only escape route. □

VZ200

Continued from page 76

more BASIC keywords than there are keys, a third shift key called FUNCTION is implemented and it and the CTRL key must be pressed along with a third key to implement the rest of the BASIC shorthand.

There are some problems with this approach. The INVERSE function and the SOUND shorthand command do not work. In addition, 10 of the shorthand commands print out two keywords at once. Also there is a COPY command the use of which is not explained anywhere. But whenever it is executed it seems to hang up the computer. The only way to escape from this mode is to literally pull the plug and start over again. Talking about hanging up, the LLIST and LPRINT commands do the same thing. If no printer is connected to the computer and these commands are issued, the computer hangs up and the power plug must be removed and then reinserted to get going again. The BREAK key does not allow you to escape from this mode, although it should.

While the BASIC provided is from Microsoft, it lacks certain handy commands such as DEL to delete a range of line numbers or FRE or MEM to get an idea of how much memory is left. It does have the extremely useful PEEK and POKE commands, but these can only be used with arguments as large as 32767. Above that you must use negative numbers.

The choice of software for this computer is limited to that supplied by Video Technology. Since no information has been released on the microprocessor used in the computer, it does not seem very likely that a lot of software developers are going to produce product for this computer. If the board mounting technique is improved in mass production, *and* a completely revised manual is prepared, *and* the manufacturer opens up software development to third party vendors with little or no strings attached, *and* a complete and well documented system is delivered, this could be a good buy.□

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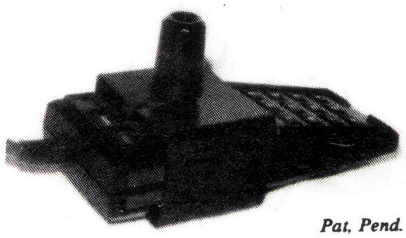

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EDUCATIONAL

Continued from page 73

into a hurdle. It's for the VIC.

Math Baseball from Educational Activities is mostly available to schools for use on the Apple, PET, TRS-80 and Atari machines. It may not improve your batting average, but then, Reggie Jackson probably can't factor.

If you've gotten this far, check out *Functions, Logic and Euclidean Geometry, Introductory Algebra* or *Ultra Function Plot* for the Apple from Avant-Garde Creations. That should keep you busy; the algebra program alone can generate over nine trillion examples.

"Our company's point of view is that the computer is a new medium in the home like TV was," says Trip Hawkins, president of Electronic Arts. "It can provide a whole new class of interdisciplinary experiences, made convenient and accessible. Not everybody can actually pilot a plane, but everybody can use a flight simulator." The foundation for company policy is the teachings of pioneer educator, John Dewey. Dewey was a promoter of "learning by doing" rather than passive listening or shooting spitballs. It is said he demonstrated the innovation of the cotton gin by making his pupils pick seeds out of cotton. Every cotton-picking program from Electronic Arts stresses total involvement.

M.U.L.E. is an economic simulation. Four players are sent to a distant planet to develop energy sources through means such as mining, farming and solar collectors. Multiple Use Labor Elements (M.U.L.E. robots) stake out players' claims. Real economic functions come into play such as supply and demand, the economics of scale, and the law of diminishing returns.

The Children's Computer Workshop, an activity of the Children's Television Workshop stresses that its purpose is to create a wholesome, engaging environment which encourages kids to learn actively. Non-violent, non-sexist, friendly programs are key, like *Peanut Butter Panic*. The object of this game is to get kids seven and older to work together to achieve a common goal. Principles of relative proportion are also involved. The action revolves around two Nutniks who need to catch stars to power their peanut butter sandwich machine. (Some of CCW's designers worked on NASA's satellites and the lunar module. Maybe they know something we don't—like the moon is made of Skippy.)

Another of CCW's programs is *Picture Palace* which encourages reading skills for six- and seven-year-olds by associating words with pictures. Both CCW programs are for the TRS-80 color computer.

Scholastic is offering a whole educational magazine in computer format. Called *Microzine*, it's targeted for readers ten and older, and will come out every two months. Features have included "Poster," a programming language you can use to create 16 color graphics, and "Secret Files," a data base storage program.

Microzine runs on the Apple and Atari 800. Other Scholastic software also runs on Atari 400, TI99/4A and the VIC-20. Programs include *Your Computer* and *Turtle Tacks*, text and graphics programming primers.

In the social studies department there is *U.S. Constitution Tutor* from MicroLearn. It's out on Apple disk but will soon be available on other formats. It can be run in the test mode or tutorial mode, where each answer has an explanation.

The Great Maine to California Race may sound like a movie you'd see at the drive-in but it's actually a geography game for the Apple. As you advance westward, you have to answer questions about each state, such as: New Hampshire is famous for: A) Coal; B) Granite; C) Copper? If you answer A or C, or Grapefruit, you drop back a state.

Comm*Data also has a world geography program called *Geography Smash* for grades four through eight. It's a fast-moving, timed game in which you identify countries and continents. □

CES PREVIEW

Continued from page 38

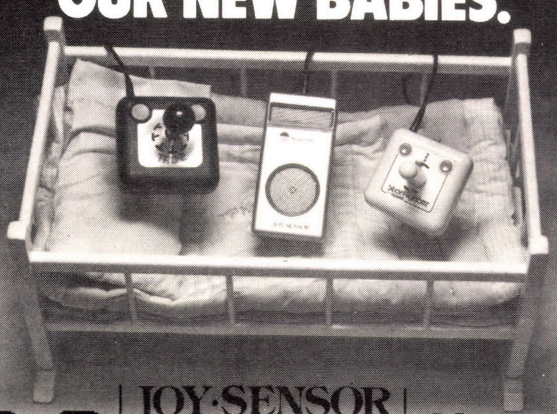
Front 1941, a computer strategy game that pits your World War II German forces against a computer-controlled Russian army.

Computer games are also part of Imagic's lineup for the rest of the year. Along with releases for the Atari 2600, Intellivision and ColecoVision game systems, Imagic will present games playable on the Commodore VIC-20 and Atari 400/800/1200XL computers. The schedule includes *Fathom*, *Quick Step*, *Moonsweeper*, *Solar Storm* and *Laser Gates* for the VCS; *Beezer*, *Fathom* and *Moonsweeper* for Intellivision; *Fathom*, *Moonsweeper* and *Nova Blast* for both ColecoVision and for Atari home computers; and *Fathom*, *Moonsweeper*, *Nova Blast* and *Dragonfire* for the VIC-20.

Parker Bros. too is joining the computer gaming bandwagon with 11 new titles, nine of them to be issued in both computer and game system format. *Frogger*, *Q*Bert*, *Popeye* and *Super Cobra* will all be released in cartridges compatible with all Atari, Sears, Mattel and Coleco game machines, as well as for the Atari 400/800/1200XL computers; *Tutankham* will also play on all these game machines, but will be available for VIC-20 computers only. Three games specifically designed for Atari computers—*Astro Chase*, *Chess* and an adaptation of Parker's own classic strategy board game, *Risk*—will be released, while the first of the *Return of the Jedi* series, *Death Star Battle*, will be issued in Atari VCS, Sears Video Arcade, Sears Super Video Arcade and Intellivision I and II formats only.

Not to be outdone, Activision will release Atari home computer versions of its hit VCS games *River Raid* and *Kaboom!*, along with two new Intellivision-compatible games, *BeamRider* and *Worm Whomper*, and for four new VCS carts: *Crackpots*, the *Xevious*-like space battle *Dreadnaught Factor*, the multi-screen *Activision Decathlon*, and new *Space Shuttle*.□

OUR NEW BABIES.



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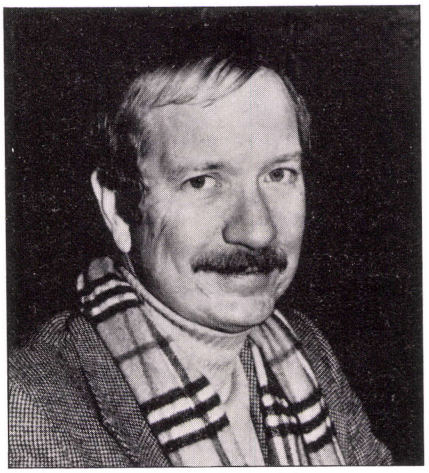
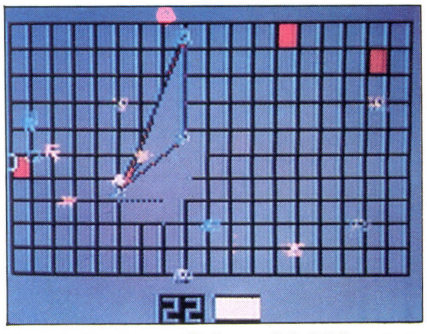
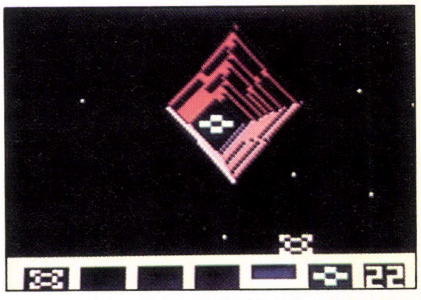


Cartoonist Gahan Wilson

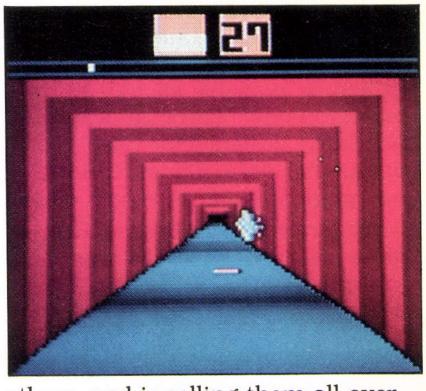
Remember that **eyeball controller** I kidded you about last month? That's right, boys and girls—no less than two companies are working on it right now. And v-game designer/physicist/sci-fi author **Ray Dettling** tells me that a company in Michigan is all set to patent a **touch feedback device** that will give you a shock every time that, say, one of the invaders in **SPACE INVADERS** shoots you. Don't know about you, but that will improve **The Fly**'s score instantly... Like those flight simulation screens in this month's article? Coin-op industry experts say there's a real good chance you'll see something like them in 1985's arcade games... Latest cartoonists doing games: **Johnny Hart** of **B.C.** (his characters star in Sydney Development Corp.'s **QUEST FOR TIRES**) and **Gahan "I Paint What I See" Wilson**. Wilson's working with **Electronic Arts**, which also signed **"Dr. J." Erving** and the Celtics' **Larry Bird** to collaborate on a home computer basketball game... Fly's Hall of Fun nomination for Most Original Computer Game of 1984: Roklan's **LIFESPAN**. Nothing to shoot or kill; the goal is to have a good life (and you only go around once, pal)... **Sierra On-Line**'s not just an Apple computer software company these days. Along with VIC-20 and Commodore 64 games, they're bringing out a Coleco wafer-tape version of **FROGGER**... **LOTSA CHOPS**: Atari's got a martial-arts coin-op in the works that even Chuck Norris could love. The animation is incredible: flying side kicks, front blows and a host of other moves that look just like the real thing. But there's an official Chuck Norris game due from Xonox, a company owned by **K-Tel**... No Deposit, No Return Games: **Romox's new ECPC cartridges** ought to make it a lot easier for you to find the hits. The carts come blank; you buy one, and then order the game you want from a list of over 500 titles. The store owner then uses a special terminal that programs your selection onto the blank in a matter of minutes. It's being field-tested now... Convinced you're the toughest Pitfaller to ever jump a croc? Join the Activision **Pitfall**



Harry's Explorers Club—a 20,000 point qualifying score nets you a jacket patch and letter of recognition. There are clubs for 25 other Activision games, and you can find out more about them by calling 1-800-633-GAME or (inside California only) 415-940-6044... Correction on that **STAR WARS** coin-op item last month: the **Atari** game reproduces not only the trench flying sequence from the movie, but also the X-Wing dogfight out in space and the flight across the Death Star... The hottest coin-op in Japan right now? Sega's **CHAMPION BASEBALL** (What! You've never played it? Guess you didn't have enough yen)... Why did **Coleco** shut down production on the **Super Game Module** when it brought out **Adam's Digital DataPak**? "The DataPak is a higher performance system" claims Coleco's chairman, Arnold Greenberg—500K of info storage compared with the SGM's 128K. If you still don't like the whole situation, write The Fly, gang... A company called **Kandyman** has bought up foreign distribution rights to old games from Data Age, Emerson, U.S. Games, Telesys and



Three screens from Roklan's LIFESPAN: Learn to take advantage of your golden opportunities in the game of life.



others, and is selling them all over the world at B-I-G discounts. Their big hit so far: **JOURNEY ESCAPE**, selling in Europe as **ROCK N ROLL ESCAPE** (The Fly hopes it's a hit 'cause he hears that **Data Age** still owes **Journey** $500,000 in royalties on that cart)... Time to rock and roll on outta here, gang. In the meanwhile, stay baaad...

"The Fly"

Q*bert™

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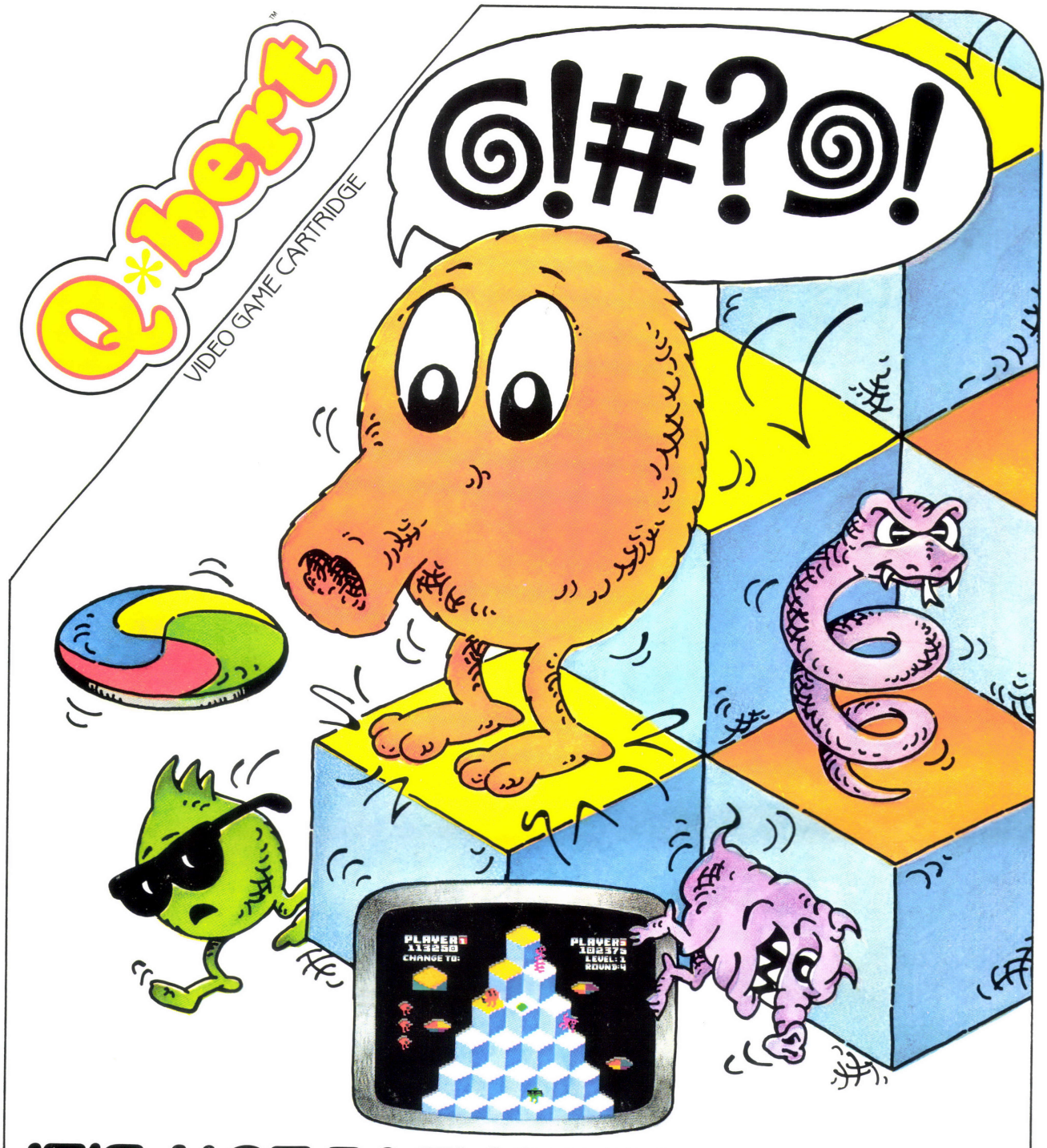

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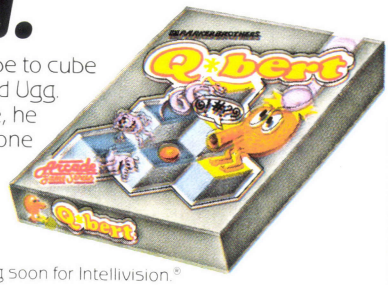

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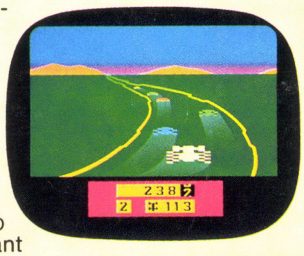
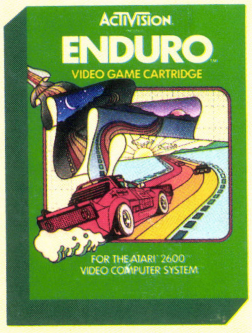
ENDURO (★★★★/★★★★) is an extremely impressive auto racing game. It's one of those rare games that elicited comments from our staff like "Wow—this is incredible!" You have to remind yourself that you're playing this game on an Atari 2600, not on one of the more "advanced" systems! We feel so strongly about ENDURO that we're reviewing the game an issue earlier than we normally would because there will be other auto racing games available soon, and we want our readers to be aware of this one before making buying decisions. ENDURO allows you to drive your race car from a normal perspective. The car YOU control is in the foreground on your screen, while the road stretches out in front of it, diminishing to a point at the horizon, so that you have a feeling of depth and distance. Control of your car is achieved with left and right movement of the joystick, and the firing button becomes an accelerator—shifting is automatic. Your racer can be slowed down by releasing the firing button or by applying the brakes (pulling the joystick toward you). The object is to pass a specified number of cars each day while covering as many miles as possible. The bottom of your screen displays mileage on an odometer, the number of the current day, plus a descending counter which keeps track of the number of cars remaining to be passed. (You begin the race at dawn on the first day with 200 cars to pass.) You start the race confidently as your head fills with the roar of your engine, but your pulse suddenly quickens as you narrowly miss a car on a tight curve. Now on a straightaway, you accelerate and gleefully pass another dozen cars, but the road curves again and you rear-end one of the racers. The counter at the bottom of the screen starts *adding* cars as several racers streak by. You recover from the collision (they are never fatal in this game), increasing your speed and concentration in equal measure. Once again at full throttle, the dry road suddenly becomes a giant snow field! You can hear the hushed sound of tires cutting through the blanket of white, and your racer becomes less responsive—slow down! Soon enough, you're back on dry roads as the sun begins to set, gradually spreading an orange glow above the horizon. Night falls, and cars are visible only as red tail lights. Just when you think you're doing well, you drive into a fog bank which cuts your visibility drastically. The fog lifts, and soon you hear a series of warning tones because it's nearly dawn. If you pass that 200th car before morning, green flags wave and you continue to race through the second day and night, with a new goal of *300 cars* to pass! We found ENDURO to have that marvelously addictive quality that makes you play "just one more time" because you're sure you can pass a few more cars the next time...While auto racing as a video game theme is not new, ENDURO is far superior to existing race games for the 2600 because it makes you part of the action, not just a detached observer/manipulator. Graphics are excellent, from the tread on the tires to the glorious blaze of sunset sky...





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